MARCH, 1932

COTTON

Serving the

TEXTILE INDUSTRIES

STANDARD-
COOSA-
THATCHER

Durene—

Used by national leaders year after year because its uniform quality adds sales value to the finished product.

STANDARD—COOSA—
THATCHER COMPANY
CHATTANOOGA, TENN.
Executive and Sales Office: Lafayette Bldg., Philadelphia, Pa.

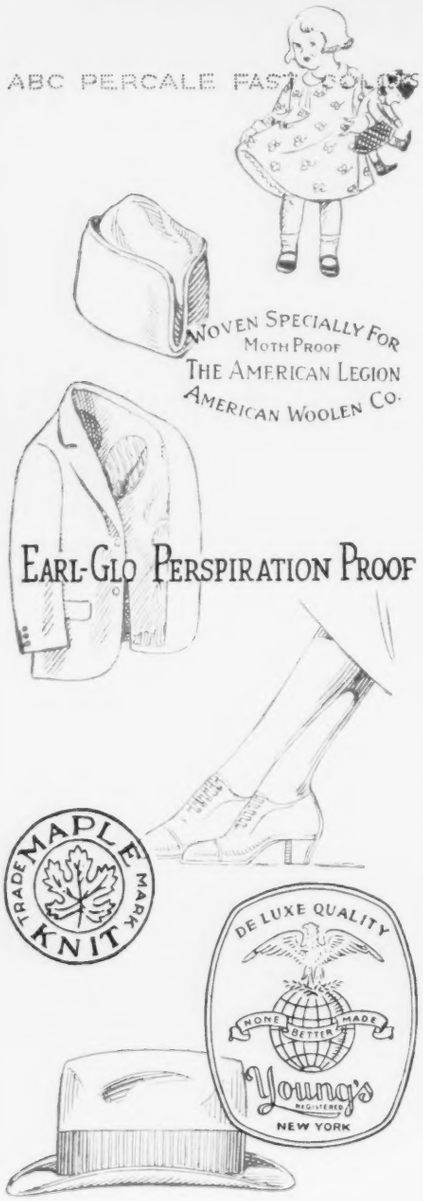
Kaumagraph protects your product and identity

Kaumagraph protects your pro

TEXTILES

from the sheep, the silkworm, the cotton boll or rayon must be

MARKED



"Let the buyer beware" today has become "Let the seller take care" — for present retail methods of buying, small stocks, constant reorders, make the retailer and therefore the manufacturer peculiarly susceptible to the consumer's reactions.

Products of merit *must* protect themselves from unfair discredit possible from bootleg competition. Proper identity has become imperative.

From thickest of wool blankets to sheerest of silk and rayon fabrics, Kaumagraph dry transfers can identify your product for you.

K. D. T.'s can be in any single color or in two colors; can be dye-resisting or not, as needed; can be permanent or semi-permanent. 350 formulas have been developed to meet different transfer needs — perhaps your problem requires a new formula — if so we will develop it.

Kaumagraph does a complete job; developing a trade-mark if you need it; making the transfers in whatever form is most convenient; supplying the equipment that makes application both economical and convenient. There is no marking problem Kaumagraph cannot help you solve.

KAUMAGRAPH COMPANY

200 VARICK STREET, NEW YORK CITY

CHICAGO • PHILADELPHIA • LOS ANGELES • CHATTANOOGA, TENN.
CHARLOTTE, N. C. • PARIS, ONT. • PARIS, FRANCE • MANCHESTER, ENGLAND

Kaumagraph protects product package identity

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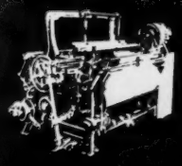
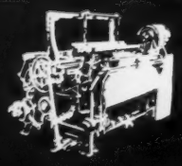
COTTON is published monthly by W. B. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription rates, United States and Possessions, $1.00 for one year; $2.00 for three years; Canada, $1.50 per year; Foreign countries, $2.00 per year. Entered second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.

STOP LOOK LISTEN



X MODEL LIMITED



RUNS EXPRESS from DEPRESSION to PROSPERITY

SPEED — 190 PICKS and UP

PRINT CLOTH TRAIN CREW

One Weaver to 102 Looms

One Fixer to 102 Looms

A Bobbin Girl for 72 Looms

Write For Rates and Timetable

EQUIPMENT

Automatic devices for Safe, Smooth Running at Highest Loom Speeds ever attained in Automatic Weaving

No Stops for Meals — Safety devices allow it to run while the crew eats

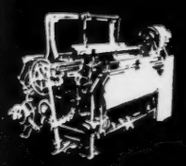
Lowest Fares because of Low Cost of Operation with Big Rebate to you in form of Mill Profits

Every Comfort and Luxury for those Mills that take a ride on this line

WHY NOT

LET YOUR MILL RIDE TO PROSPERITY

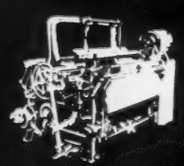
ON THE X MODEL LOOM



DRAPER CORPORATION

Hopedale Massachusetts

Southern Offices Atlanta Ga and Spartanburg S C



NORTHROP LOOM LINE

WHAT THE NEW C&K COTTON KING LOOM MEANS TO THE FIXER

"NOW I'LL TELL WHY I LIKE THE COTTON KING LOOM

"COMPARED to fixing on older types of looms, fixing on these looms is a cinch . . . Parts have all been made more accessible by attaching them to the outside of loomside, redesigning others, etc. . . . It takes me less time to replace parts because of the machining done at the factory. Parts are now really interchangeable. . . . Adjustments, when necessary, are easy to make, and when made, parts stay fixed, due to lock washers, better bolts and better design.

"AND, because of the less fixing required and the higher speed of the loom, my weavers get better production and make more money, and are, therefore, a more contented lot to work with."

THE NEW C & K PRECISION FAMILY

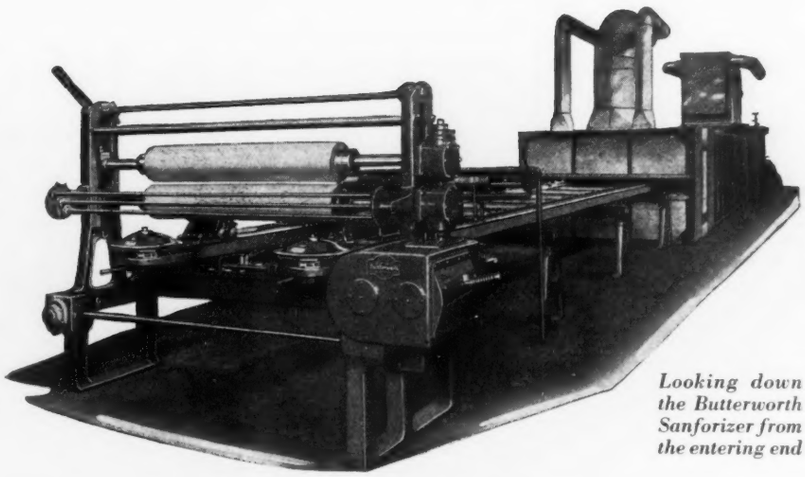
High Speed Worsted	*Super Silk*
4 x 1 Automatic; 4 x 4 Non-automatic	Cone, dobby or intermediate head
Cotton King—Cam or dobby	Non-automatic with feeler motion
2 x 1 and 4 x 1 bobbin changing	2 x 1 or 4 x 1 bobbin changing
2 x 1 shuttle changing	2 x 1 shuttle changing

PRECISION PRINCIPLES OF CONSTRUCTION ALIKE IN ALL

CROMPTON & KNOWLES LOOM WORKS

LOOMS FOR COTTONS, SILKS, RAYONS, WOOLENS, CARPETS AND RUGS, BLANKETS, JACQUARD FABRICS, ASBESTOS, LINENS

Allentown Paterson Philadelphia WORCESTER - PROVIDENCE S. B. Alexander, So. Mgr., Charlotte



Looking down the Butterworth Sanforizer from the entering end

They recommend that you purchase the

BUTTERWORTH SANFORIZER

Every executive even slightly interested in Sanforizing should read this letter.

From the Ramapo Finishing Corporation, Sloatsburg, N. Y.

"We have your letter of the 19th instant requesting further information on the working of our new Sanforizing Range.

"We are very glad to write you a letter on this subject. Our machine has now been in almost continuous operation for three months, and has proved very satisfactory in every way. We have now had the opportunity to try out various types and weights of goods ranging from 2 to 5 yard cloth, and we have been able to shift from one class of goods to another without any adjustments to the machine other than the usual gear, spray, and width changes necessary for obtaining the desired shrinkage results.

"We think that the shrinkage results are very accurate and are much closer to perfection than is common, and the fact that the machine runs so evenly without annoying shut-downs for small repairs and adjustments has added greatly to our production results.

"From our experience, we should say that this range represents the highest development yet attained in Sanforizing Machinery. And we can recommend unhesitatingly your machine to anyone contemplating the purchase of Sanforizing equipment.

H. A. Barry (Signed)
Treasurer"

BUTTERWORTH has been licensed by Cluett, Peabody & Co., Inc., to build Sanforizers, which give fabric a pre-determined shrink. We build Sanforizers complete; there is no divided responsibility.

Butterworth Engineers will be glad to talk with you relative to what you will gain by Sanforizing your own product. Also, literature will be sent promptly.

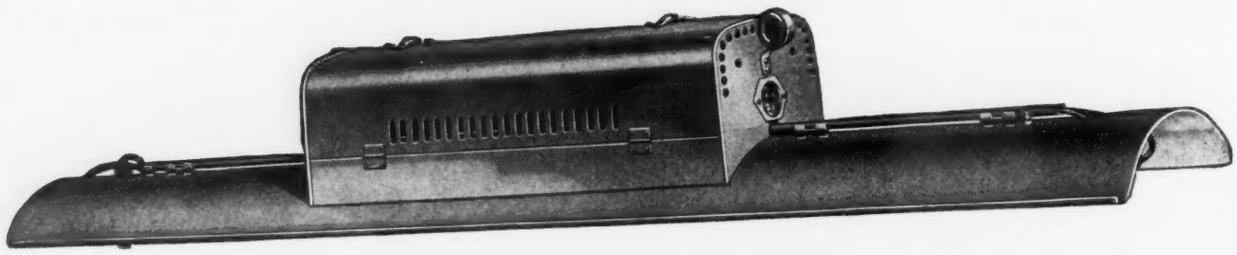
H. W. BUTTERWORTH & SONS COMPANY, *Established 1820*
PHILADELPHIA, PA.
PLANTS *at* PHILADELPHIA *and* BETHAYRES, PA.

New England Office:	*Southern Office:*	*In Canada:*
TURKS HEAD BUILDING	JOHNSTON BUILDING	W. J. WESTAWAY CO.
Providence, R. I.	Charlotte, N. C.	Hamilton, Ontario

BUTTERWORTH *Finishing* MACHINERY

A COMPLETE LINE OF FINISHING MACHINERY FOR THE TEXTILE INDUSTRY

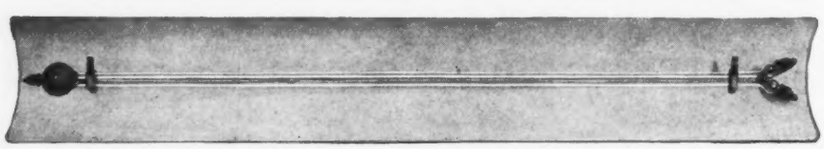
ANNOUNCING ..COOPER



Starts Quickly . . . Has New Reflector and Straight-Line Tube . . . Redesigned Auxiliary meets latest Underwriters' Recommendations . . . many other advantages

NEW! . . . Rectifier starting—a new invention—makes the new and improved Cooper Hewitt Lamp the quickest starting lamp we have ever produced.

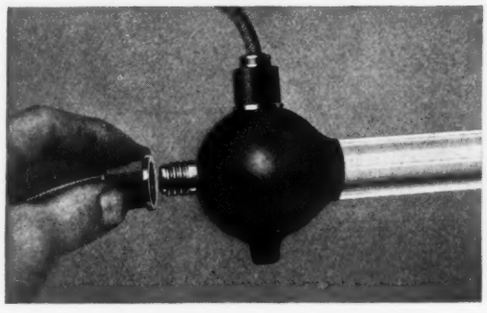
NEW! . . . A redesigned mercury-vapor tube with a straight-line effect. Positive "horns" are now in the same plane with the tube—and the projecting negative is eliminated. The tube is definitely positioned in the reflector.



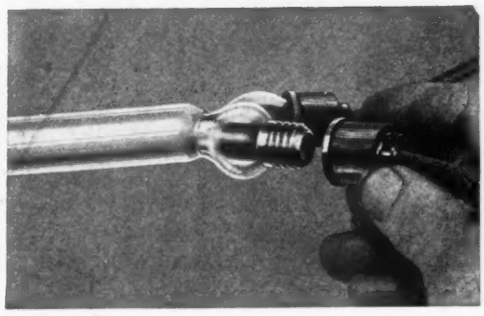
NEW! . . . A simplified reflector, with concealed wiring, rounded corners and greater reflection surface, completely covers the new straight-line tube. Absence of holes and projecting "horns" makes for easier maintenance.

a New and Improved HEWITT LAMP

NEW! . . . The redesigned auxiliary incorporates the latest recommendations of the Underwriters' Laboratories. Flush mounted attachment plug receptacles, protected resistances, special ground connections and screw driver transformer terminals are among the many improvements.



Pictures show ease of attaching new insulated screw base terminals.



The auxiliary serves as a protective element to each Cooper Hewitt Lamp. It automatically adjusts itself to meet variations in the line. This is another distinctive feature of the Cooper Hewitt lighting system. No other system will, of itself, take equal line voltage variations without damage to the unit. A combination of transformer and ballast resistance protects each Cooper Hewitt Lamp.

And this new and improved model carries with it the old policy of a 30-day trial installation without obligation to purchase. For complete information, address: General Electric Vapor Lamp Company, 853 Adams Street, Hoboken, N. J.

Cooper Hewitt Light is better than daylight

GENERAL ELECTRIC VAPOR LAMP COMPANY

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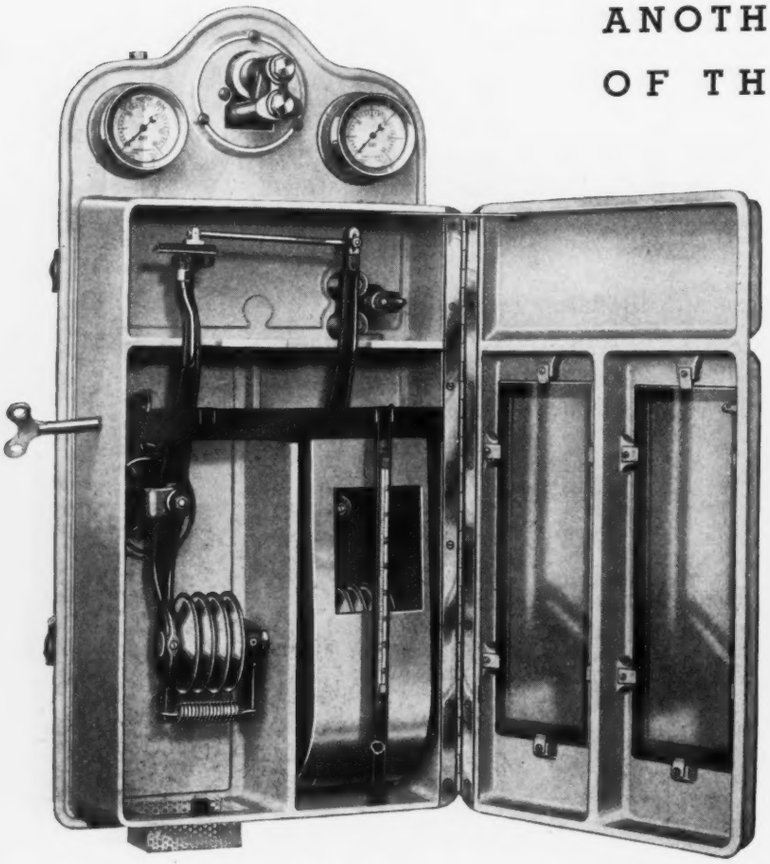
RUGGEDNESS

ANOTHER INDIVIDUALITY OF THE PSYCHROSTAT



THE PARKSPRAY PSYCHROSTAT is so sensitive that it accurately controls humidity in laboratories and testing rooms. At the same time it is so rugged that it will retain its fine sensitivity under hard mill use . . . even under severe vibration.

This regulator is built for years of hard service . . . and it will give them. There is no hygroscopic substance in its structure to stretch, become fouled, or lose its life. All the parts are of metals carefully selected as most adaptable to each requirement.

We can't tell you how long a Psychrostat will last, because we've been making them for only twenty-two years!

ParkSpray
Certified Climate

Bulletin 226E explains why the Psychrostat is accurate, positive, permanent, easily adjusted. We shall be glad to send it to you.

§

Parks-Cramer Company

FITCHBURG, MASS. CHARLOTTE, N. C.

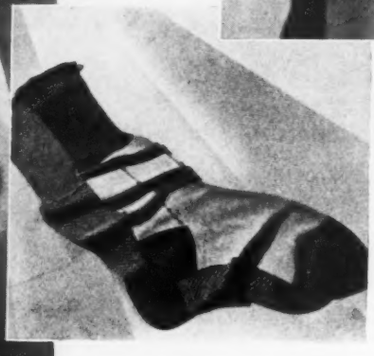
CANADA: Parks-Cramer Westaway Co., Ltd., Main and McNab, Hamilton, Ont.; 455 Craig West, Montreal, P. Q. CHINA: Elbrook, Inc., Shanghai, Pekin, Tientsin. GREAT BRITAIN, IRELAND: Cook & Co., Manchester, Ltd., 18, Exchange Street, Manchester, England. CONTINENTAL EUROPE: Compagnie Ingersoll-Rand, Paris, France. INDIA: Ingersoll-Rand (of India) Ltd., Bombay, Calcutta. MEXICO: Sr. Don Fernando Caraves, Apartado 1100, Mexico City.

ADEQUATE HUMIDITY — ACCURATELY CONTROLLED

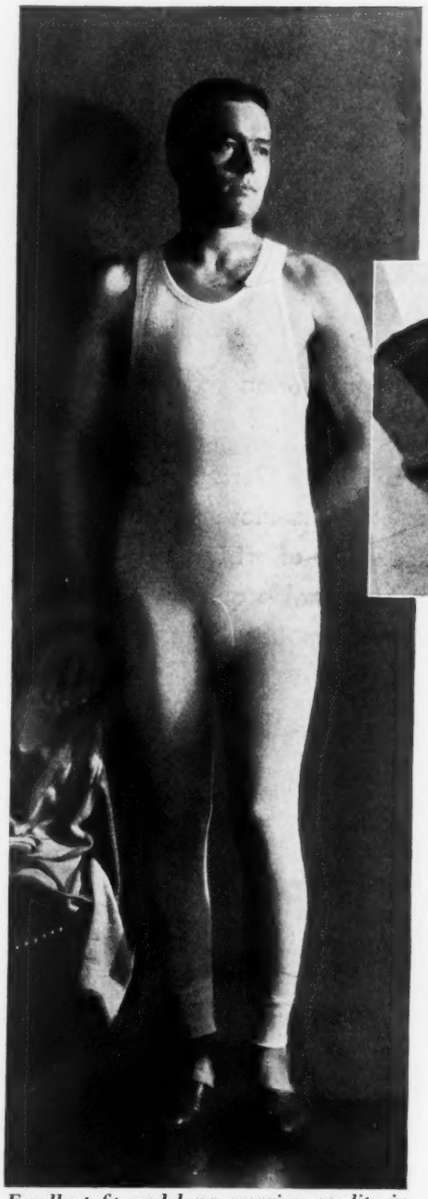
Manufacturers see NEW SALES OPPORTUNITIES with *DURENE*

The Taunton Knitting Company uses soft durene in a finely ribbed vest and shorts.

A pullover shirt of fine durene, from the Ware Valley Manufacturing Co., Inc.



Durenehosiery — comfortable and durable — from Chas. Chipman's Sons Co., Inc., and the New Idea Hosiery Co., Inc.



Excellent fit and long wearing quality in a durene union suit from Cooper's, Inc.

● In a season that persistently demands unusual value, manufacturers find that the basic quality of durene, backed by national advertising and favorably known to the trade, is helping to extend markets and bring in repeat orders from regular customers.

For durene is the very finest cotton yarn, made stronger, more elastic, more absorptive and more durable by mercerizing. It is exceptionally soft and fine, with a pleasing dull lustre that outlasts countless launderings. Its standard of quality is maintained by the Durene Association of America—leaders of the industry who offer you this yarn and the selling help of their New York organization.

Let us tell you more about durene in leading lines of underwear, hosiery, dress and decorative fabrics, and other essential merchandise. Call—or write.

DURENE ASSOCIATION OF AMERICA, 250 FIFTH AVENUE, NEW YORK CITY

Durene
THE FINEST COTTON
QUALITY BEGINS WITH THE YARN

MEMBERS:

ABERFOYLE MANUFACTURING CO., Philadelphia, Pa. HAMPTON COMPANY, Easthampton, Mass.
AMERICAN YARN AND PROCESSING CO., Mount Holly, N. C.
CLARENCE L. MEYERS, INC., Philadelphia, Pa. DIXIE MERCERIZING COMPANY, Chattanooga, Tenn.
SPINNERS PROCESSING COMPANY, Spindale, N. C.
STANDARD-COOSA-THATCHER COMPANY, Philadelphia, Pa.

You can't find a fault, *Mr. Holmes!*

Mr. Sherlock Holmes is hereby challenged to try his hand at finding a defective feature in Tuffer Card Clothing.

Surely he has no comeback in the patented flexible foundation that is guaranteed against shelling out. And the wire—regardless of Mr. Holmes' third degree—won't let sharp crowns, knee and breakage develop. Let him check up on the life of Tuffer and he'll find that, much to his chagrin, it is unusually long. He'll also find more pounds of production and less waste in stock.

But the case of Tuffer Card Clothing is no mystery. For 65 years Howard Brothers has spared no expense or effort in making a card clothing of unquestionable quality. Naturally, a splendid reputation has been built along with it.

Consult a Howard Brothers expert on your particular problem.

HOWARD BROS. MFG. COMPANY

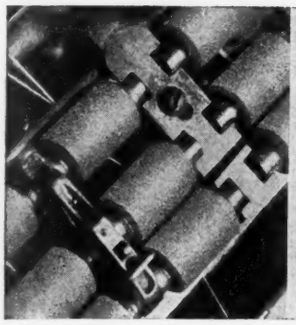
HOME OFFICE AND FACTORY: WORCESTER, MASS.

Southern Plant
244 Forsyth St., Atlanta, Ga.

Branch Offices:
Philadelphia, Pa., Dallas, Texas, and Washington, D. C.

TRADE MARK TUFFER REG. U.S. PAT. OFF.

CARD CLOTHING



THIS HELPFUL BOOK contains plain facts for the busy mill executive . . . cost studies based on actual mill records . . . expert analyses from independent sources . . . complete details on the many advantages of Armstrong's Seamless Cork Cots. Send for your free copy.

FILL IN THIS COUPON AND MAIL IT TODAY!

Armstrong Cork Company,
923 Arch Street, Lancaster, Penna.

Gentlemen: Please send me your free book, "The Facts about Armstrong's Seamless Cork Cots."

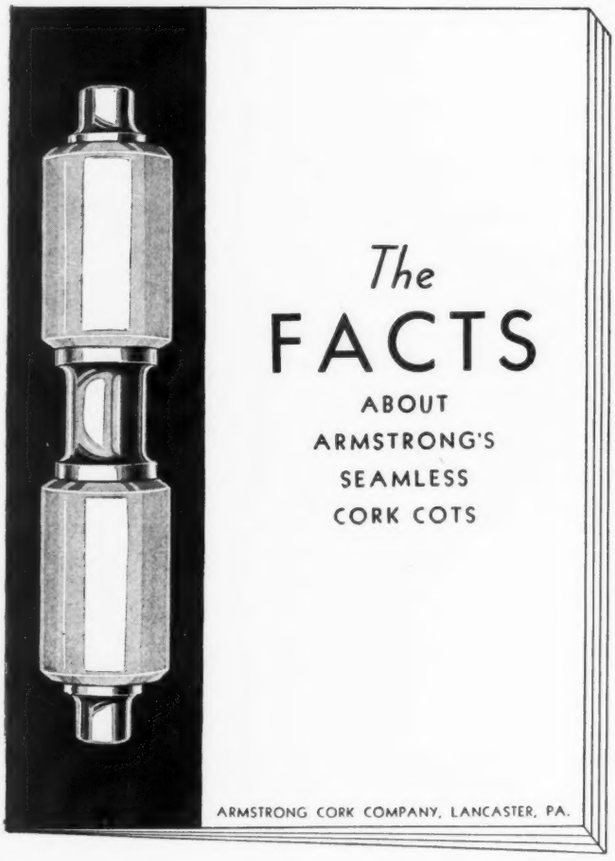
NAME.....

FIRM NAME.....

ADDRESS.....

CITY AND STATE.....

If a certain mill had this FREE BOOK *they could save* $8,500 *in* 1932



A SAVING of 50% on annual roll covering cost *is* a big promise. But it isn't "guesswork." Exact cost studies made over two- and three-year periods by dozens of mills have proved these savings to be a definite fact.

This free handbook collects for the first time all the important data on the performance of Armstrong's Seamless Cork Cots. It will repay you to read it carefully.

Judge for yourself why more than 90 mills with a total spindlage of 5,000,000 have now adopted Armstrong's Seamless Cork Cots to help reduce roll covering cost . . . why all these mills tell the same story: "Roll covering cost is greatly reduced.—Strength and evenness of yarn equalled or bettered.—Cork rolls are less affected by changing humidity conditions.—Clearer waste is noticeably decreased.—There is less trouble with lap-ups and hard ends."

Armstrong's (A) Product

Mail coupon now for this FREE book of data and actual mill performance figures.

Armstrong's Seamless Cork Cots

For Spinning and Card Room Rolls

50%
100%
150%

Annual Return On The Investment

Not a fairy tale, but a fact. Cotton mills on all classes of work have changed their pickers to the single process system with **Aldrich Synchronizers,** and at so small a cost that the annual return is often equal the cost of the change.

Also, the laps are a little evener, and a little cleaner. Less floor space is used, and there is somewhat less power consumed.

In these strenuous times there are very few opportunities to get at least 50% interest on your money, so why not investigate our proposition? There is probably a mill near you that has our system in use, and where you can see it in operation.

AldricH MachinE WorkS

Greenwood, South Carolina

The acetate-viscose team that pulls together

Many of the more successful manufacturers of fancy half hose are now relying, often exclusively, on Chacelon acetate yarn knit with Sunbeam viscose yarn. These two yarns have proved, by comparative tests with others in the field, that they are a superior, profit-pulling team.

From spinning solution to packing, Chacelon and Sunbeam are adjusted to the needs of the half-hose mill. With them, knitters and fixers say they can tune in machines more quickly . . . keep them running more smoothly and with less misplating.

Even the most intricate designs come up clear and sharp when Chacelon and Sunbeam are used. They have demonstrated again and again that they are ideal half hose running mates not only for plating but also for straight knitting.

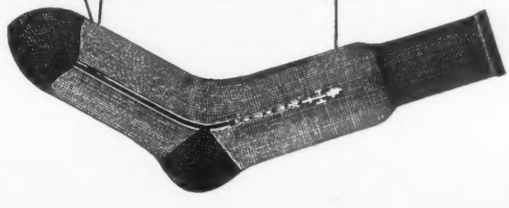
Let them produce for you the same all-round satisfactory results for which they are rapidly becoming famous.

It's in the yarn

TUBIZE-CHATILLON CORPORATION

2 PARK AVENUE · NEW YORK

MAKERS OF VISCOSE, NITROCELLULOSE AND ACETATE YARNS

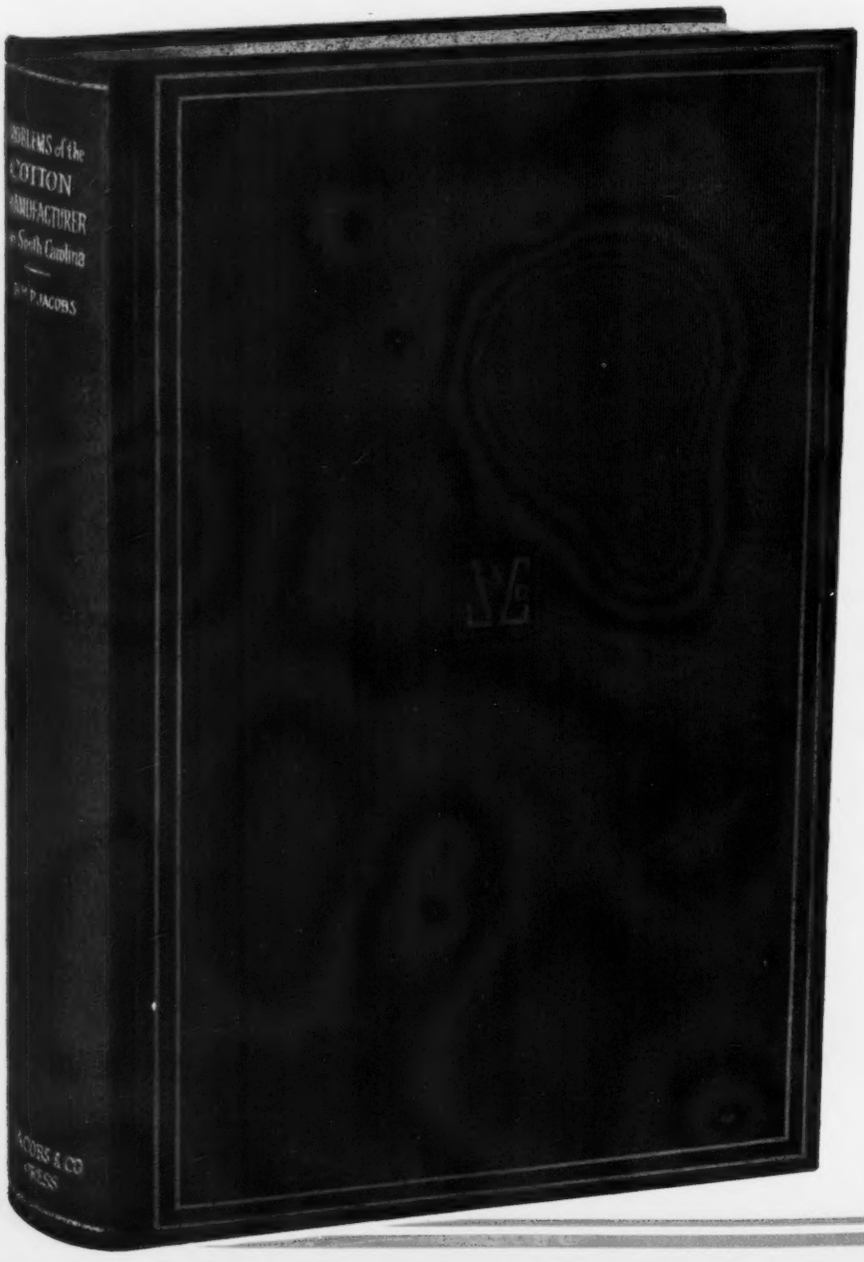


Problems
of the cotton manufacturer

A frank discussion of many of the difficulties common to cotton manufacturing in the textile state of South Carolina.

By WILLIAM P. JACOBS

an ardent student of textiles and director of extensive research on the subject



***A* convincing analysis of the many common problems resulting from:**

The Size of the Industry
Its Growth
Machine Progress
Agricultural Troubles
The Human Element
Illiteracy
Health Preservation
The Stretchout
Wages
Foreign Competition
Wage Equivalents
Dividends
Cost of Living
Taxation
Bonded Debt
Legislation
Marketing
Finance
The Village

Other interesting subjects

The Public's Viewpoint
and the Public's Responsibility

A HANDY REFERENCE BOOK ON MANY MAJOR PROBLEMS FACING THE INDUSTRY AT LARGE.

A TIMELY COMPARISON OF WAGES, TAXES, LAWS, WAGE EQUIVALENTS, EDUCATION, BONDED INDEBTEDNESS, etc.

In the libraries, on the desks, and in frequent use by many of the leading mill executives of America.

Price $5.00—Sent on Approval

This enlightening volume presents many facts and figures unfamiliar to the public and to many mill executives. It defends the industry in a positive, convincing manner. It speaks with a voice of authority and brings to light a true picture of the industry. It tells the truth about the cotton mills of South Carolina and other textile states. It answers hundreds of questions that are in the minds of the friends of industry. It gives a new and entirely different slant to the development of the textile industry. It tells the truth and proves it. It is compiled by an impartial, thorough, fact-finding organization.

First Edition Limited — Only 300 Copies Left

Fully illustrated.

Many charts, tables and statistics.

Abbreviated comparison of labor laws, wages and taxes.

Expressions from the press, the government and the mills themselves.

MAIL THIS COUPON TODAY

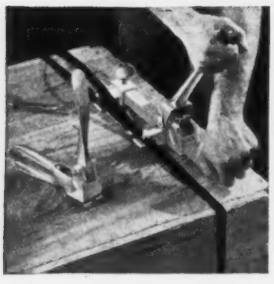
Jacobs & Co. Press Date_____
Clinton, S. C.

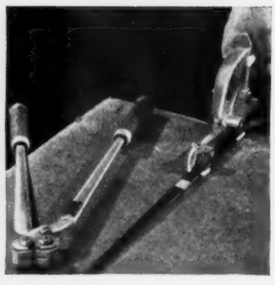
Please mail_____copies of "The Problems of the Cotton Manufacturer" by Wm. P. Jacobs on approval. After inspection I will either return the book or mail my check @ $5.00 per copy.

Name _____

Address _____

ACME





Bale and Box Strapping Equipment

Acme Steel Company has served the textile industry conscientiously and well for nearly a half century with their requirements for bale tie band and box strapping. No stone has been left unturned in the development of new equipment, in co-operation with the mills, to advance the science of better and more economical packing. . . . . Let us help you with your packing problems. Our representatives, working out of branches listed below, are at your service. . . . . Call on them—or the whole Acme company.

ACME STEEL COMPANY

General Offices 2832-40 Archer Ave., Chicago SAVE THE SURFACE AND SAVE STEEL *Branches and Sales Offices in Principal Cities*

BROOKLYN, N. Y. ATLANTA, GA. CHARLOTTE, N. C. NEW ORLEANS, LA.

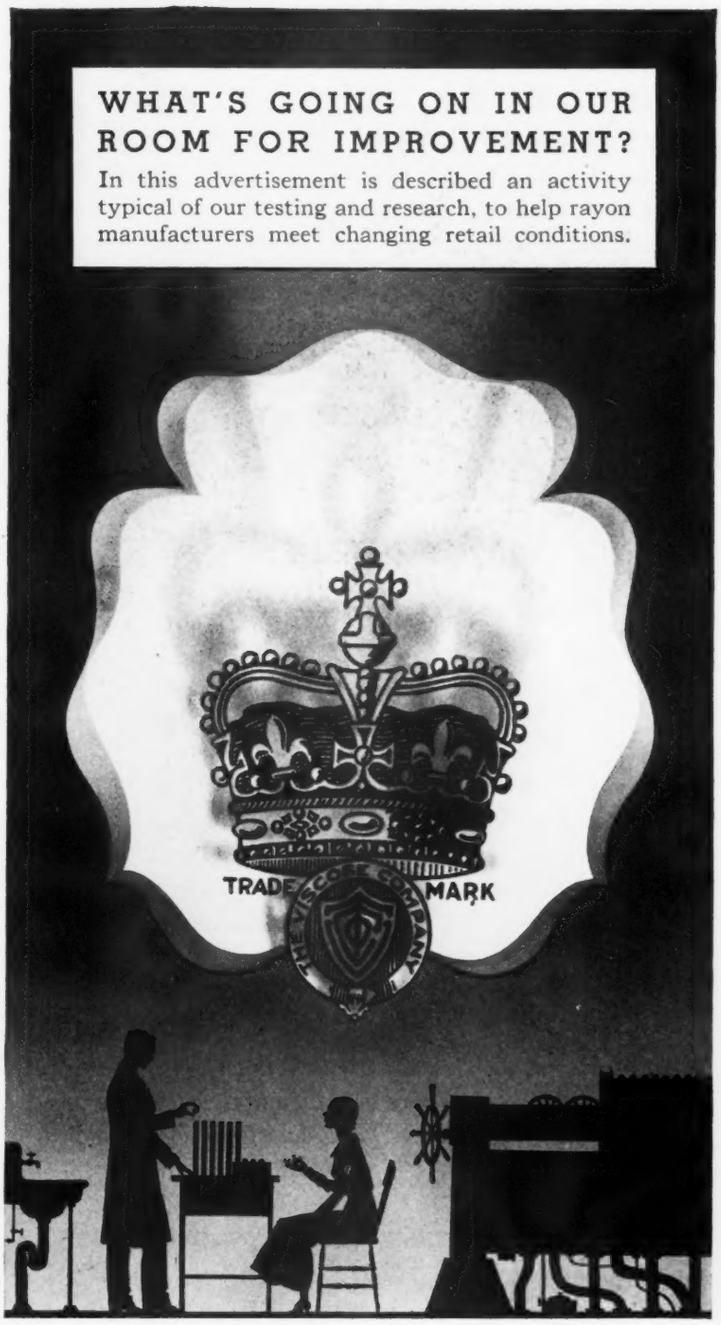
STEEL

WE KEEP OUR EYE ON THE BALL

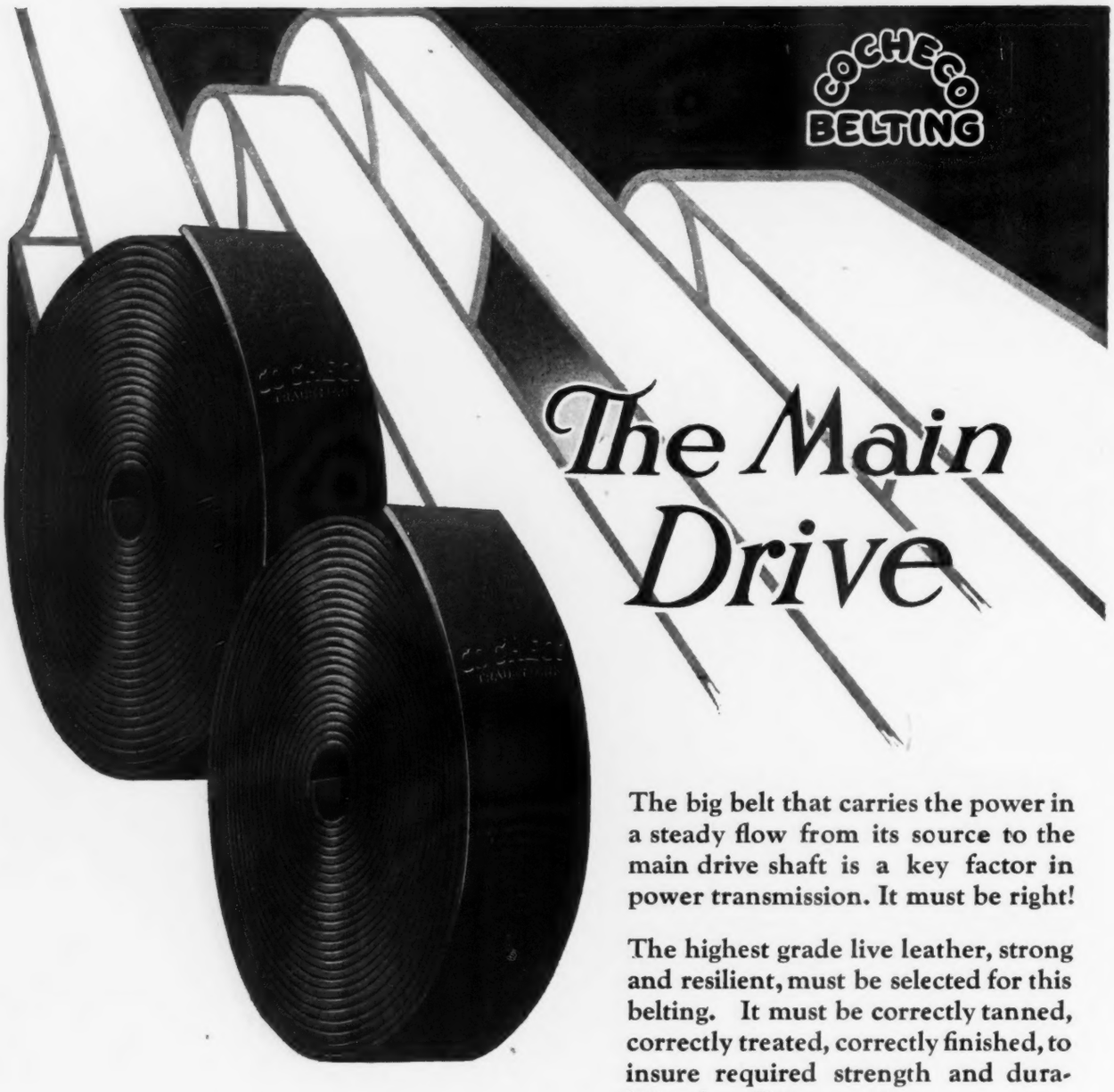
. . . IT DETERMINES THE STRENGTH OF THE YARN!

IT ACTUALLY DOES! In this way: A small steel ball of known weight is timed as it drops into a test-batch of the basic viscous mixture. Our chemists know from the drop of the ball when the viscosity of the mixture is just right. And on viscosity depends, to a great extent, the strength of the finished rayon yarn. • For retailers today are demanding so much of rayon merchandise. Fabrics must be light as gossamer . . . and as strong as sole-leather! If you have a knitting or weaving problem that demands a rayon yarn of great delicacy with a disposition toward great strength, consider the qualities of the Crown, and let us help you choose the right rayon yarn.

THE VISCOSE COMPANY
200 Madison Avenue New York City


WHAT'S GOING ON IN OUR ROOM FOR IMPROVEMENT?
In this advertisement is described an activity typical of our testing and research, to help rayon manufacturers meet changing retail conditions.
TRADE MARK

CROWN RAYON YARN



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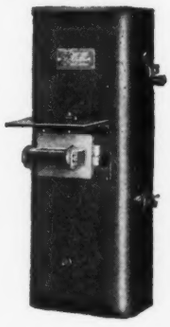
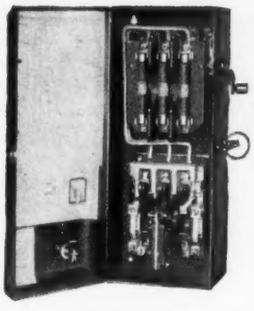


Combination magnetic switch including test jack



(Above and left) Combination magnetic switch without test jack (closed and open views)

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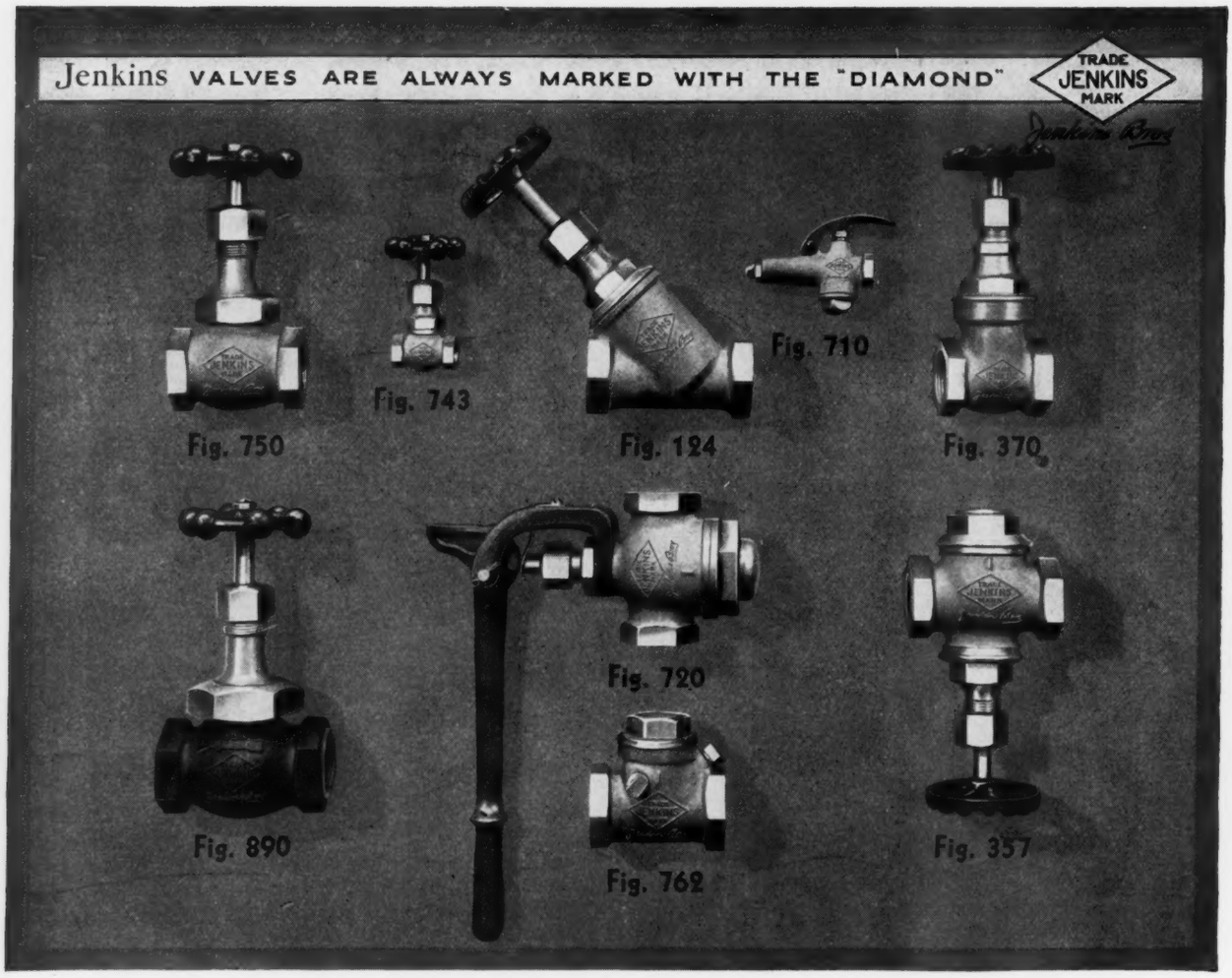

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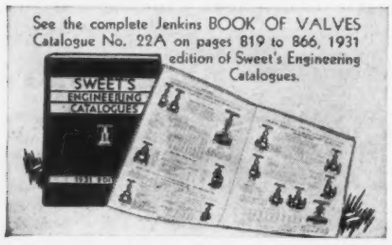
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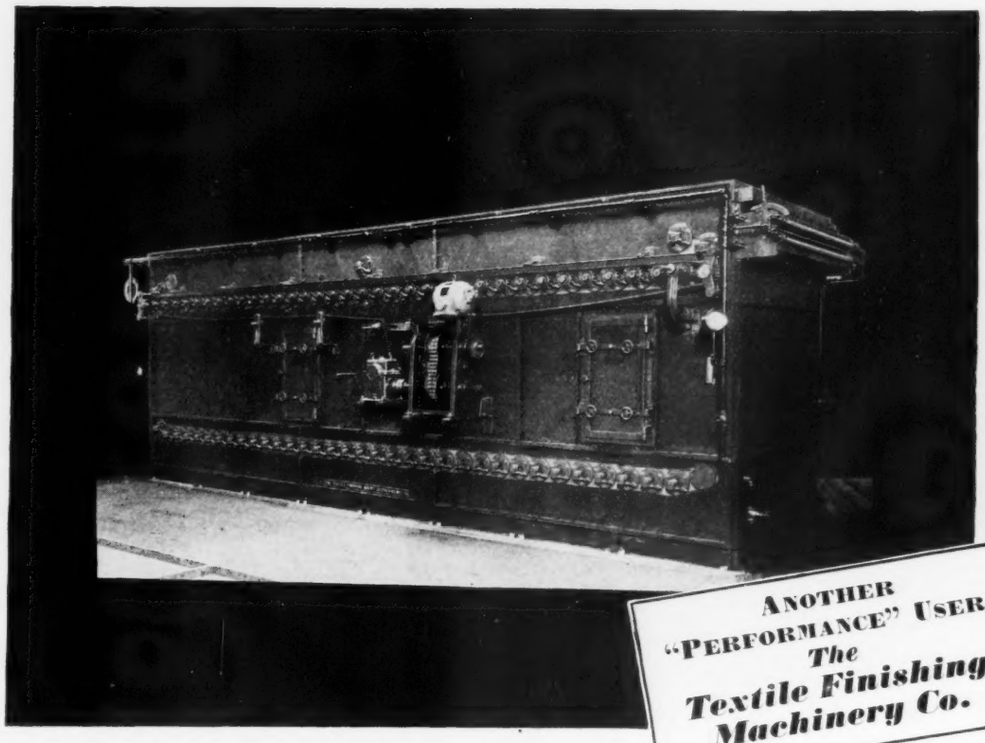

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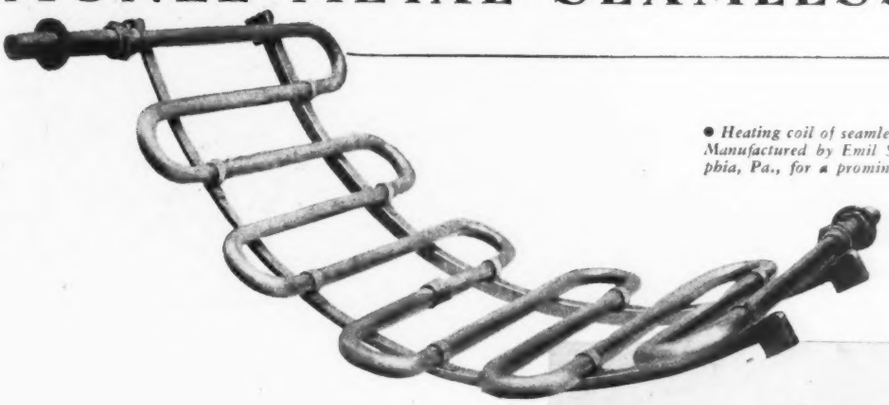

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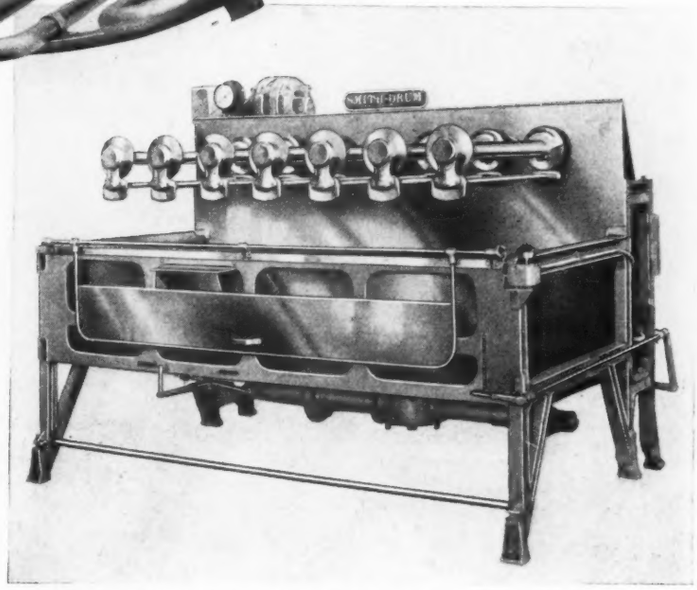

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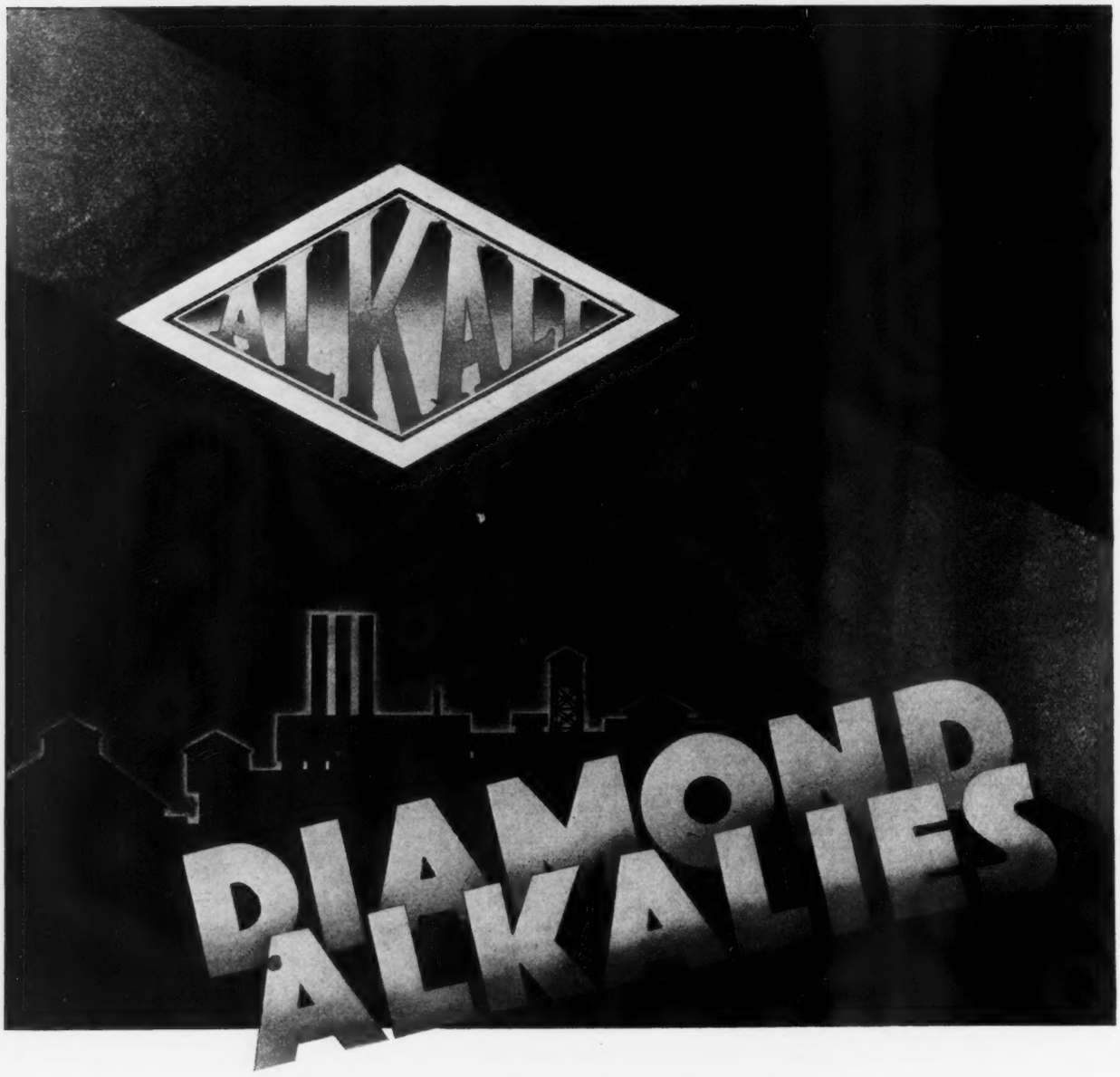

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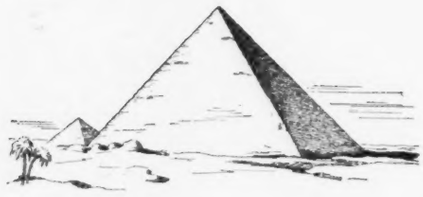

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Also, included among the important caustic users are the paper mills who buy 42,000 tons a year. The textile industry needs about 30,000 tons annually for cotton processing and mercerizing. Farther down the list are leather tanning, rubber reclaiming, vegetable oil refining, lye making and the preparation of pharmaceuticals and medicines, all of which consume considerable quantities.

The shipment of liquid caustic in tank cars is a recent development which reduces handling costs and at the same time renders the product more convenient to quantity users.

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Vol. 96 **COTTON** No. 3

March, 1932

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director

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Published Monthly by

W. R. C. SMITH PUBLISHING COMPANY

Atlanta, Ga.

JOHN B. SHAW, *sales manager*, 39 Grove St., Auburndale, Mass. Boston Exchange, West Newton 1031.
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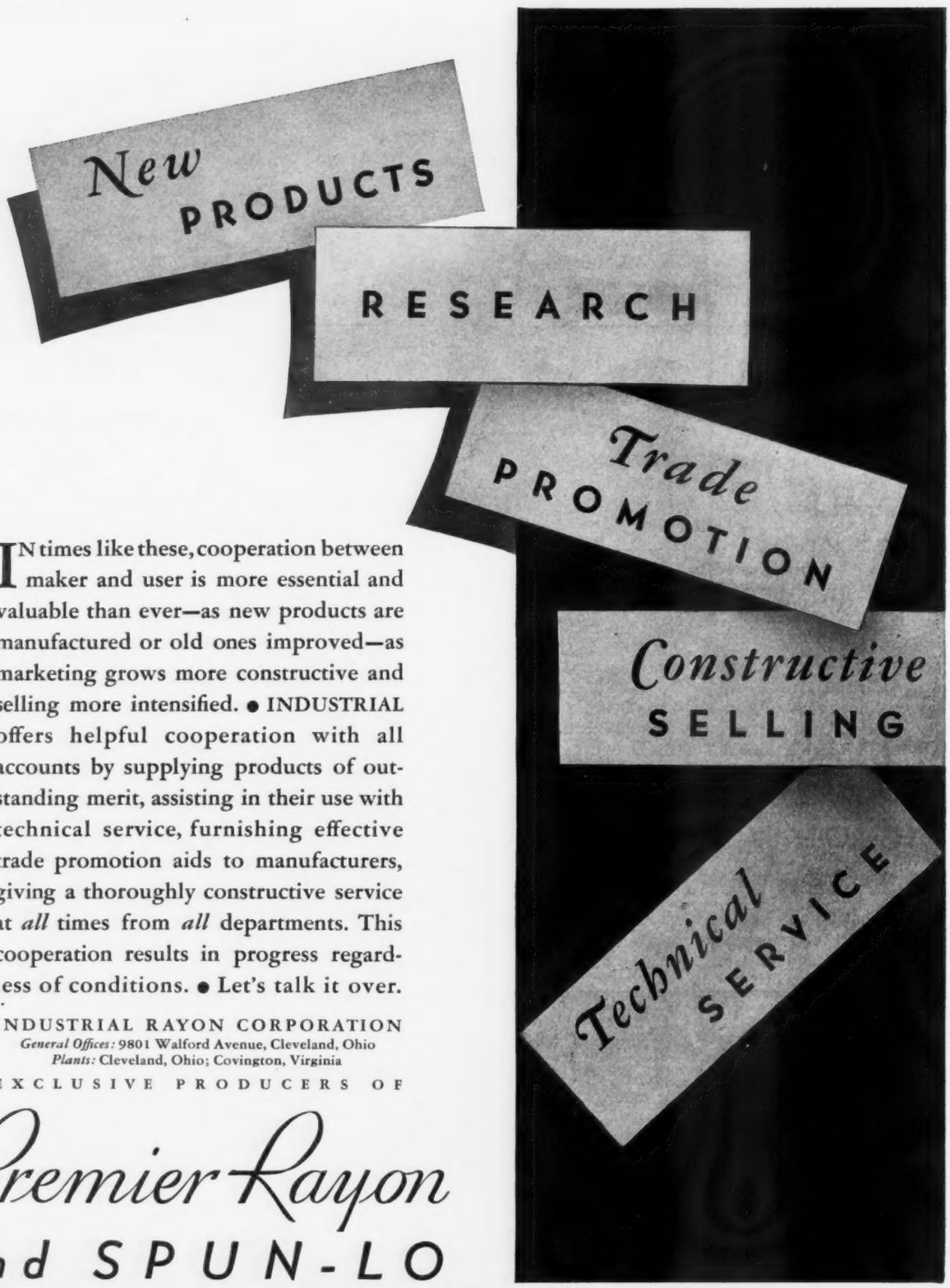

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Vol. 96 March, 1932 No. 3

Spending Money to Save It

By Dunhill Marsden

THIS article carries a punch. If it makes you "mad", then part of its purpose is served. Its other object is to show plainly how a mill man can be "saving at the spigot and wasting at the bung", or "penny wise and pound foolish".

True economy is not necessarily refusing to spend money, but rather the judicious expenditure of money—particularly in these times.

Take stock of your own attitude, in the light of the arguments propounded here . . . . . .

A FEW years ago almost any business man felt that an investment that would yield a return of 10% was worth looking into; 20% would sell almost anything, and 50% was sure to quickly enrich the fortunate owner of the proposition that would pay such enormous returns.

It's different now! Some textile mill executives are no more moved by the presentation of a proposition paying 50% returns annually than they are by the announcement that next Tuesday will be the fifth of the month. Presidents and treasurers will coolly turn down a purchase that by their own admission will net 100% on the money, and merely remark that they can't afford to spend the money.

This seems incredible, impossible, and absurd. In fact, it is all of those, and worse—it is idiotic. But it is too common to be dismissed so casually, since a great many gentlemen who are anything but idiots are frequently doing this very thing. What is the explanation of a condition of this sort? Why will presumably able business men refuse an enormous return on equipment investments, when they are perfectly willing to go on operating the mill without profit?

The only reasonable explanation seems to be that these gentlemen have lost their courage or their perspective, or both. They have either been so thoroughly licked by the depression that they are willing to take the rest of the licking lying down, or else they have entirely lost sight of the simplest elements of business operation. If a business is unprofitable, there are only two ways to make it profitable: increase the price of its product, or decrease the cost of the product. Competition has effectively prevented increasing prices to any noticeable extent, but ingenuity, and the judicious expenditure of money for better methods and equipment can reduce costs.

The stockholders of an enterprise are interested mainly in dividends, and the proper maintenance of the property to perpetuate dividends. They are not concerned particularly with whether these dividends have come from high prices for goods made on obsolete machinery and by archaic methods, or from low prices for goods made at lowest possible cost. And a monetary return made on a machinery investment is just as useful for paying dividends as a profit on manufacturing operations.

This is not intended as a criticism of any particular individuals, nor as an argument for widespread expenditures for questionable equipment investments of dubious value. It is intended as a strong criticism of the destructive state of mind so prevalent at this time that a man can't afford to do something to save his life.

There are not many 100% investments, but there are some. 50% propositions are more numerous, and it is surprising how many things can be done that will bring in 25% a year, or better. And generally speaking, a business organization that is so near bankruptcy that it cannot afford to put out money at 50% interest, has no excuse for existing, and ought to get out of the way for somebody that is in a position to carry on. These moribund mills have no place in the industrial picture, and the quickest way to get them out of it is for the more vigorous members of the industry to get their costs down to the point that will starve out the ones who can't or won't get up-to-date.

If a change in method, or the modernization of machinery will in a certain instance pay 100% on the investment, there will be no difference at the end of the year in the total expense of operating the mill if the investment is made. It is like getting something for nothing, and something that will keep working for you many years to cut costs. If a mill can afford to pay out money for inefficient methods, it can afford to pay out the same money for something that will remedy the inefficiency to the extent of returning the money within a year.

For an executive to get in the state of mind that makes him think he cannot afford to spend money for anything except what is already netting him a loss, is a most unfortunate state of affairs, and a big percentage of the mill executives are in that very condition now.

Not long ago I talked with a friend who was explaining how hard up they were. He wanted to buy a machine of some sort that cost just over $300.00, and

with which he could enable two operatives to do what three did then. There was no question about the fact that they could cut the cost of the operation. The only question was getting the money for the machine, and the treasurer would not let him have it. Think of that! A 200% investment of a small sum like $300.00, and it could not be spent!

Another friend had recommended a floor scrubbing machine on a job where he could get by with one hand instead of two, and while I have forgotten what the exact figures were, the return on the outlay was around 100%. But could he get it? Not at all. They had to "economize". To economize by spending twice as much for a job as it was worth.

Another case was that of a mill which got so hard up they could not afford some badly needed new roving bobbins. The carder had urgently reported the need for about $600.00 worth of bobbins, and the manager said that they would have to get along the best they could without them. So, in order to make needed roving at times, they had to cut good roving off of bobbins. The waste loss from this practice ran as high as $100.00 a week, but while they could afford to lose $100.00 a week in the general operating expense, where it was well covered up, they could not afford to spend $600.00 for supplies, where the treasurer could spot this extravagance.

I recently saw a mill that had two hands in the opening room, and as it was a small mill, I suggested to the manager that for about $250.00 to $300.00, he could put an extended apron on his bale breaker, and then one hand could easily do all the work. They couldn't afford it, although it would pay more than 200% on the investment.

There are several mills where the pickers are still fed by hand, purely from force of habit, although an automatic distributor could be used. They formerly used different mixes, and kept them separate in bins, but now the stock is all the same, and could be fed better by machinery. The distributors would pay from 100% to 200% on the investment, but they "cost too much".

I recall a card room in a small coarse goods mill, where the cards were heavily overloaded. There were only about 30 cards in the room, and 4 of these were of an obsolete make. These four had got in such bad condition that they could not be run, and as they were orphans, the management would not clothe them. Good cards of the same make as those in the rest of the room could be bought, and would have relieved a condition that was causing a lot of poor work, yet they could not be bought.

The superintendent of a small yarn mill was telling me about a proposition he had investigated, and which would save him a bit over $1200.00 a year by spending $600.00. I ventured to suggest that he would surely get so profitable a change made at once. "No, sir," he said, very emphatically, "this is no time to be spending money. I would not recommend anything to my people, even if it paid 1000%. We have got to hang on to our money these days". Now, what good is a bird like that to anyone? A superintendent that would not at least recommend a proposition of that sort ought to be fired.

Are you and your operating executives, like the mill man pictured here, literally waving away opportunities to make 50% to 100% return on investments in your plant? . . .

One of the best illustrations along this line is the present trend toward single-process picking. There are several methods of converting regular pickers to the single-process system, ranging in price from about $300.00 to $1500.00 a line. There does not seem to be any difference of opinion among the great majority of superintendents that single-process pickers actually do better work than the regular breaker and finisher installations, and they certainly save a lot of money in operating expense. There are numbers of mills that have changed their pickers by one of the less expensive methods, and are getting returns of 100% or more on the money invested, as well as better output from the machines. Yet I see hundreds of the old style pickers still running, and the superintendents say they can't afford to spend money for a mere 100% return.

Another good example of the boomerang economy complex is the practice of running cloth rooms, packaging and shipping rooms with little or no humidity. Cloth or yarn is thus shipped out with low moisture regain, and every bale contains as much as 12 to 15 pounds more goods than it should. A mill manager that would squabble for weeks over a claim for this much shortage, will blissfully ship thousands of tons of goods with this overage, which results in an enormous loss to the mill, and which could be stopped with a modest outlay for better humidification in the proper departments.

I can call to mind cases where better than 500%

return on the investment could be made with a few humidifiers in the cloth room, and the mill is too hard up to put them in.

Every mill that runs any waste should feed this waste with an automatic feeder that will put the waste into the cotton in an exact proportion. Feeding waste by hand is a dangerous proposition, particularly where single-process pickers are used, and an incalculable amount of bad work can be made if waste can be dumped in at will by the opening room hands. One of these feeders costs a few hundred dollars, and will pay for itself several times over in a year in the improved running of the work. Yet there are dozens of mills that still dump the waste in by the armful, and get some picker laps with perhaps 20% waste, and others with none.

Not long ago a friend told me about a superintendent who put in a requisition for a pulley to replace one that had been damaged in some way and had torn up a belt. The requisition was turned down, and the pulley in a short time had torn up another belt. Again the requisition went in for a new pulley, with an explanation of the urgent need for it. It was turned down once more, and the damaged pulley is rapidly tearing up another belt. The belt damage, according to the superintendent, was at least ten times the cost of the new pulley, yet the management was so obsessed with the idea of keeping supply bills down, that they would buy the belt in order to keep the mill running, but would not get the pulley to keep the belt running.

These are merely observations, given as indicating a trend of mind on the part of some mill managers. This is not intended as a list of things a mill ought to do, and there are dozens of things that would come to mind that could be similarly cited. I have purposely listed things that cost so little that the money involved could not amount to anything in comparison with the size and importance of the mill.

There are many new developments that involve very large capital expenditures, and which pay handsome returns on the money invested. Few, if any of these will pay 100% or even 50%, but there are plenty of little things around the plant that can be done for small money, and which will save enough every year to pay the manager's salary, and for the said manager to say the mill can't afford the money for a 100% investment is too weak an excuse for anyone to think he really means it. What he probably does mean is that economic pressure has crushed him down until he doesn't know what to do, and is afraid to do anything, and doesn't.

F. P. Garvan Elected President of U. S. Institute for Textile Research, Inc.

Francis P. Garvan, president of The Chemical Foundation, Inc., was elected president of the United States Institute for Textile Research, Inc., at the meeting of the latter's Board of Directors, January 22, at The Chemists' Club, New York City. He succeeds the late Dr. Samuel W. Stratton who was the first president of the Institute. The nomination committee that prevailed upon Mr. Garvan to head the Institute consisted of H. V. R. Scheel. chairman, Dr. E. H. Killheffer and Philip A. Johnson.

Mr. Garvan is a Yale graduate and an attorney-at-law by profession. During the World War he was head of the Bureau of Investigation of the U. S. Department of Justice, and assistant attorney general under Attorney-General Palmer. He succeeded the latter as Alien Property Custodian, and in this capacity and later as president of The Chemical Foundation, he was one of the chief factors in conserving and expanding the chemical dyestuff industries in this country.

The Chemical Foundation was organized in 1919 at the suggestion of the Alien Property Custodian by members of the American Dyes Institute, the American Manufacturing Chemists Association and others engaged in the domestic chemical industries, to buy from the Alien Property Custodian and hold for the chemical industries and for the country at large the German-owned United States chemical and allied patents taken over by the Alien Property Custodian under the Amendment of November 4, 1918, of the "Trading with the Enemy Act". According to the charter of The Chemical Foundation its free net earnings shall be used for the advancement of chemistry and allied sciences in industry in the United States, but since its organization the greater part of its earnings have necnecessarily been utilized in fighting expensive litigation and the open and insidious attacks of those interested in perpetuating the German chemical monopoly in this country.

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Transparent Wrapping Material Made from Cotton.

The Eastman Kodak Company, Rochester, N. Y., has begun production of a transparent wrapping material made from cotton. "Kodapak", as the new transparent wrapping material is called, is manufactured from cellulose acetate, which is also the principal material entering into the production of an important type of film made by Eastman (safety film) and of the cellulose acetate yarn which the Tennessee Eastman Corporation makes for the textile trade. Although film and the new Kodapak are manufactured at Rochester, all the cellulose acetate used to manufacture these commodities as well as the yarn is made by the Tennessee subsidiary at Kingsport, Tenn. The company describes the new material as follows:

"Kodapak has a brilliant, glass-like clarity, and a silvery appearance when it is crumpled in the hand. Its limpness permits it to fold easily and neatly around corners of packages. It is easily cemented in closing packages. Tests show that Kodapak has certain very definite advantages. It successfully withstands the action of liquid water without softening or distortion of shape. It is highly transparent and colorless. It does not have a tendency to become brittle in extreme cold and it will withstand high temperatures without coloring." Cotton, in the form of cellulose nitrate, is used also by Eastman in manufacturing all types of film that are not made of cellulose acetate.

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Dates of Atlanta Meeting of American Association Definitely Announced; to be Held May 20th and 21st.

At press time for this issue definite announcement is made by Secretary W. M. McLaurine that the annual meeting of the American Cotton Manufacturers Association will be held in Atlanta, Ga., on Friday and Saturday, May 20th and 21st.

These days are the concluding days of Second National Cotton Week (May 16-21) and this will give additional interest to the occasion.

Headquarters will be at the Atlanta-Biltmore Hotel. A program of unusual value is being arranged, and it is understood that exceptional entertainment features will be provided.

The Influence of Vocational Education upon Textile Mill Efficiency

Eleventh of a Series of Articles on "Putting the Textile House in Order"

By Michael Welsh

THIS ARTICLE is closely related to a previous one in this series. ("Training Understudies," page 118, December, 1930, COTTON.) The purpose of that article was to point out the importance of having local men qualified to step into key positions on short notice. Attention was directed to the triple-barrel advantages of a definite understudy system. The direct mill benefits, esprit de corps, and the ability gauge of higher-ups as affected by understudy attitudes were discussed.

This article delves deeper. Its purpose is to turn a magnifying glass upon the less conspicuous, to recognize things which are really vital to efficiency, but which are so far removed from the vision of many executives that they are not aware of the potentialities.

Modernization and efficiency are the order of the day. Buildings, mechanical equipment, methods and systems are being painstakingly scrutinized and analyzed. Each mill is determined to reduce its manufacturing costs. Obsolescence is being recognized as one of efficiency's greatest parasites. Surveys by textile experts are not uncommon. Never before has the material side of the textile industry been given such attention. Replacements, alterations, revisions and in fact a multitude of forms of modification are resulting from pressure-driven desire of managements to meet the demands of competition. A more scientific, a more skilled textile industry will be the healthy outcome. Unfavorable economic factors are serving the textile industry well.

MOST mill men are proud to promote men from within the ranks of their own organizations, and many do so at every opportunity. This worthy attitude, however, must be backed up by adequately training operatives and sub-executives, to prepare them for promotions when openings occur. Vocational education is an essential part of such a program of training, and in this article, Mr. Welsh discusses some of the general phases of the subject. We wish strongly to emphasize his urge for a greater personal interest in this work on the part of the management.—The Editor.

Modernizing the Personnel.

Vocational education for employees is an essential part of a well-balanced industrial modernization program. Those mills which have for some years included vocational education in their employee relationship activities are already reaping benefits. Only a few days ago an operating executive of a textile plant gave much credit to the night classes for the success the company had experienced in its modernization activities. His organization has been conducting vocational night schools for more than a decade, and during that time practically every promotion has been made from the ranks of the night classes.

It is not enough for mills to merely sponsor vocational classes for employees, and to agree to put up their one-fourth or whatever part of the teachers' compensation they are asked to contribute. The management of an organization should look upon vocational classes as a mill investment and should try to make the investment as profitable to the mill as possible. Too many see the mill vocational class in the same light as a domestic science class, but if the former is properly conducted they vary in many ways, but conspicuously in that many of the benefits can be tangibly measured insofar as both the mills and the individual students are concerned.

Key-men Must Give Support.

It is no easy matter to conduct vocational classes satisfactorily. In fact, the writer is of the opinion that the majority of such classes are very inefficiently conducted. In some cases this inefficiency is due to the teachers. In the first place, just anybody can't teach; and in the second place, all who possess the knack of teaching do not have sufficient practical and theoretical knowledge to satisfactorily put the subject matter across to the students. Good vocational class teachers are not easy to find, but if mills truly realize the importance of vocational classes they can be found.

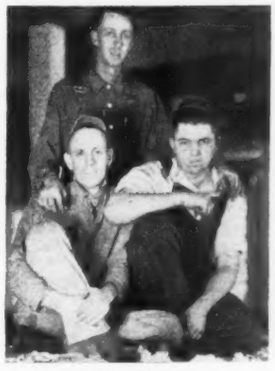
Vocational classes often fail because the keymen of mills do not lend their moral support. It is important that vocational classes be accorded the cooperation of the superintendents and overseers. An overseer of weaving should be vitally interested in classes in weaving and loom fixing. He should welcome the opportunity of rendering aid through advice and information to the instructor and should try to induce employees in his department to attend the classes.

In order to be successful, night classes should have equipment to work with. It is hard to teach a class in carding with a piece of chalk and a blackboard. Only so much can be accomplished with what might be called rudimentary teaching equipment. Machinery blue prints and pictures, samples of stock, trips to the plant, etc., aid materially in getting across to the students such information as will enable them to become more efficient employees.

Some plants have provided small workshops for their vocational classes. Units of machinery, such as a loom, a card, etc., are included in the equipment furnished. When possible, it is certainly advisable to so assist vocational classes. When machinery is replaced it is not a bad idea to ask the vocational teachers if they can use any of the discarded equipment.

Management Should Take Personal Interest.

The management of a plant should frequently manifest interest in vocational classes. Occasional visits encourage the teachers and stimulate interest in the classes. A lack of ostensible interest on the part of the management is apt to cause both the teachers and the students to minimize the importance of vocational work. When this happens the morale of both teacher and student drops and satisfactory results are impossible.



Vocational training will help make workers like these invaluable. Are you actively encouraging vocational education for them? . . .

The writer considers it advisable for the teachers to periodically report the progress of the students to their respective overseers. General reports should be rendered to the management after each term. Several years ago an important promotion was to be made in a plant. The superintendent had always been very much interested in the night vocational classes his mill had been conducting for quite a few years. Several employees (all night school students) were being considered. He finally consulted the director of the night school and requested copies of answers to an examination the members of the advanced class had been given. He soon selected his man, and the past few years have proven that his judgment was good. Without night school advantages in this particular case promotion would have been next to impossible, for the employee had practically no previous education and he was familiar to a limited extent with only one job. The mill gained a valuable man.

Numerous instances might be cited when individuals have advanced themselves by vocational school work, but the foregoing case is outstanding, first because the promotion was a big one, and second, because it is an outstanding example of the attitude a mill superintendent should have toward vocational classes.

The writer has dealt rather sparingly so far with the full title of this article—Vocational Education and Mill Efficiency. The knowledge that vocational education, unless efficiently directed, taught and utilized, can have but little effect upon the efficiency of a mill accounts for this. After all, a mill vocational class which does not have a distinct purpose is really not justified. That distinct purpose should invariably be to train more capable, more versatile, more efficient employees. The efficiency of a mill can be no greater than that of its employees. Valuable modern machinery in the hands of inefficient operatives is inefficiently operated. Modern mills cannot be successfully operated by obsolete methods. The mill employee of yesterday is very unlike the mill employee of today. The standards have changed and are still changing. In the new textile industry skilled employees are needed. Constant training of employees to cope with more scientific problems is indispensable to lower costs and greater profits. Yes, vocational education has a direct bearing upon mill efficiency. It can be made to be a means to that end.

The mill that overlooks employee training in its modernization program is sure to be disappointed with its achievements. Top-sided efficiency is comparative to the punctured automobile tire. One side looks all right but it can hardly be serviceable in that condition. It's a mistake to place too little emphasis upon the importance of training employees holding minor jobs in a textile mill. Training will not only make them more efficient on their present jobs but will prepare them for the ones higher up. The consciousness on the part of the employees that promotions in their plant will come from their ranks increases their interest in their jobs and therefore in their company's welfare.

The Federal government and most of the states are materially helping industries in employee training. In many localities industry only has to bear one-fourth of the teachers' salaries and provide a place for meeting. Such expense is small compared to the benefits which can be derived, but as stated previously, mill management should not wash its hands of vocational classes after it makes arrangements to meet the stipulated requirements to secure federal and state aid. Interest and co-operation on the part of the management can do more toward making vocational classes develop efficiency in the mill than can all interested parties combined. This statement is not meant to reflect in any way upon the ability of vocational supervisors, directors and teachers, but to emphasize the importance of management's interest. A survey of two vocational systems, one having management co-operation and interest and the other operating without it, will prove beyond the shadow of a doubt that the statement is correct.

A really efficient mill, from an employee standpoint, is one in which each person understands his job thoroughly, can perform his duties efficiently, recognizes his true relationship to the welfare of the mill, and is either prepared or is preparing himself for a higher job. Such employees are loyal. Mills should strive to approach such an ideal condition. Vocational classes will help.

In putting your textile house in order, do not neglect employee training.

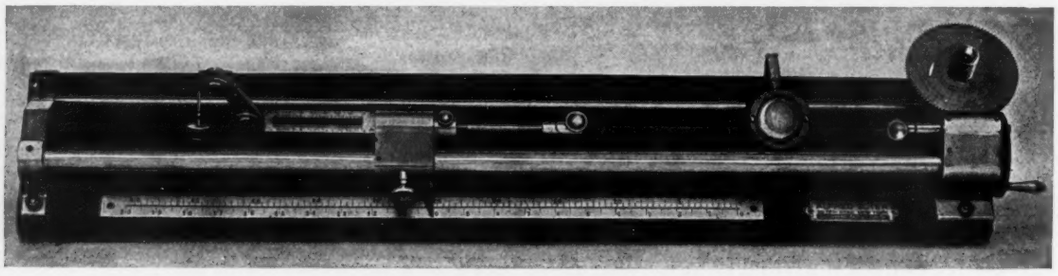
Studying Twist in Yarn

By E. R. Schwarz*

AN interesting and instructive discussion, prepared for us by an authority, on a subject of much importance. Practical spinners will find it of particular value, and other operating executives will find in it much information of a character which can be usefully applied in every-day work . . . . .

ONE OF the most important elements in the structure of a yarn is the twist. Indeed, according to some accepted definitions twist is essential in order to have a yarn at all. It is unfortunate, then, that twist should be complex rather than simple in its nature. For, whether he will or no, the practical mill man must deal with it every day of the week.

The writer does not intend to advocate the laboratory methods for twist analysis as being essential for routine mill use. In many cases they are invaluable, but while their importance is fully recognized, nevertheless, a great many of them are not practical for direct use by the spinner. The purpose in discussing them here is to give the mill man a better understanding of the conditions found in twisted strands, and to aid in answering for him certain questions which continually crop up.



Twist Tester for the Mill.

First of all, the spinner is interested in getting the twist he desires. This would seem simple enough, but no spinner finds it so. Theoretically we need simply to insert a definite number of turns into a measured length of strand, one end of which is held still while the other rotates. It is not hard to hold one end of the strand and to rotate the other. It is not difficult to feed the strand forward continuously at a reasonably constant speed. It is not easy, however, to put into the strand, thus controlled, a definite number of turns. The complicated mechanism of the slubber is one fairly good solution. The expensively geared twister is another. Any inexpensive and rapid method however, is beset with difficulty. Slippage of driving bands and non-uniform speed of traveler are contributed by the machine. Irregular density and diameter of strand and non-uniform tensions and contractions are added by the material.

Further, there are inconsistencies introduced by the attempts of various groups to define the twists as to direction and kind. The fact is that the American Society for Testing Materials has been obliged to write a specification (D180—27) which defines right and left twist clearly and simply and identifies regular and reverse twists respectively with the above, and then has written in a foot note qualifying the specification by reversing it completely. The naive reason is that the sewing thread industry refuses to recognize the specification as written.

This condition of affairs does not conduce to ready understanding of the twist structure of plied and cabled yarns. Throughout the following we shall adhere to the American Society for Testing Materials specification without qualification.

A yarn has right hand twist when, if it is held vertically, the spirals or helices run upward to the right. In such a yarn the twist is the same as that of the thread on a right hand screw. If the spirals run upward to the left, the structure corresponds to a left hand screw thread and is left twist. The mental labor involved in tracing back the direction of twist from the clockwise or anti-clockwise rotation of the spindle is cumbersome. To rely on simple memory that a clockwise rotation of the spindle puts in left twist and vice versa is hazardous due to the reciprocal relationship involved. To hold up the yarn and look at the direction of the spirals is so simple that anyone who can distinguish up from down and left from right will never be confused or misled.

The entire story of yarn structure and twist measurement is too involved to go into here—and since it involves micro-analysis, only a small part of the story can be told. Colman and Bissland, working in the Textile Laboratory of Massachusetts Institute of Technology, have outlined the relations existing in single and plied yarns before and after plying. They worked out a simple method for measuring the twist in the single yarn as it exists after plying. They made no

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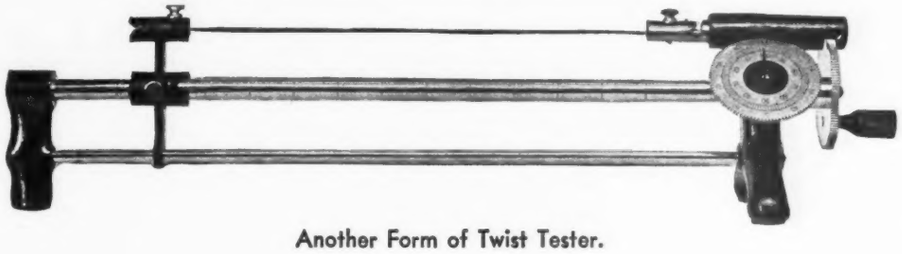
corrections for twist contraction effects, but recognized that this phenomenon existed and recommended that such corrections be determined and used. Their work is of interest at this time particularly because of the continued discussion in the various textile magazines as to whether the single twist is changed in plying and cabling.

If two yarns, each containing 20 twists per inch right hand, are plied with 10 twists per inch left hand, it will be approximately true that 10 twists per inch (right) will be left in the single yarn as it lies in the ply. For every turn in plying, one turn in the opposite direction takes place in the single. And right here is the reason why the foregoing statement is not quite correct. There is a difference between *turns* and *twist per inch*. In the former no mention of the length of yarn involved is made nor required. In the latter case, the length of yarn is essential. The total number of turns put into a yarn, divided by the total length of the yarn, is evidently the twist per inch.

Suppose that we consider the previous example in the light of the above. The single yarn contained 20 twists per inch (right) and two pieces of this material each 100 inches long are twisted into a 2-ply. The length of the resultant plied yarn is 90 inches because of twist contraction. If 900 turns have been inserted during the plying, there will be 10 twists per inch in the plied yarn. Now the insertion of the 900 turns (left) removed 900 turns (left) from each of the single yarns. Hence in the 100 inches we now have 2000—900 or 1100 turns. This would give 11 twists per inch, instead of 10 as does the uncorrected calculation. The value 11 is not strictly accurate. The removal of twist from the singles allows them to elongate slightly so that there is really a length much greater than 100 inches making up the final ply.

In tire cord of the super twist type where single and plied yarns are twisted in the same direction and the cabling is done in reverse, the extension of the single yarn is so great during the manufacture of the cord, that if a measured length of cord is *untwisted* the parallel strands left are actually shorter than the original cord. In other words certain constructions make it possible for a yarn to grow *shorter* as it is untwisted—strange as it may seem. In many cases the parallel plies remaining after untwisting the cord are 5 per cent shorter than the twisted cord.

The important point is that no real idea of the twist conditions in the components of a plied or cabled yarn can be obtained by adding or subtracting twists per inch. You add a certain number of twists per inch to plied yarn when you ply it, but you do not remove the *same number of twists per inch from the singles*. You do remove as many *turns* from the singles as are inserted in the ply. The addition or subtraction must be of total *turns* and the twist per inch must then be computed from this data in conjunction with the twist contraction (or elongation). The mill should, therefore, be provided with a twist counter which will measure the changes in length of the twisted strand . (See illustrations.)



Another Form of Twist Tester.

Consider the case of a simple 2-ply yarn. This is inserted in the twist counter with a gauge length of 10 inches, and the yarn is untwisted until the two strands are parallel. The turns of ply twist are thus determined. Dividing this value by the original length of 10 inches gives the twist per inch. The length of the parallel strands will now be found to be more than 10 inches. But because of the shortness of cotton fiber, it will not be possible to count the twists in more than an inch or two of single yarn. The tester is therefore re-set to a gauge length of one inch and the twist in this length of single yarn is determined.

Any practical spinner recognizes the fact that the twist per inch just obtained is not constant throughout the length of the yarn—but that it varies widely from point to point. The average of a large number of tests must be taken in order to have anything like a representative value.

As used by Colman and Bissland a portion of the plied yarn was then placed in the tester at a 2 inch or 3 inch gauge. Now one strand was separated from the ply, cut through near one jaw, and untwisted by hand from around the other single. There will result a certain lengthening of this remaining yarn as it straightens out. Reset the counter so that this remaining strand, *which has not had its twist disturbed,* is gripped on a gauge length of one inch. Untwist it and record the result. Instead of the twists per inch which were originally in the single yarn, we have only a fraction as many. Since the strength of the singles depends very largely upon the grip of the fibers on each other, and since this frictional grip will be greatly reduced by the removal of twist, the plied yarn will probably not be as strong as it would have been with a higher single twist. Thus in many cases a notable improvement in the ply yarn strength can be obtained by slightly increasing the original single twist. This cannot be carried too far because of difficulties in handling and increase of cost. The former trouble comes from the tendency of a hard twisted yarn to kink whenever tension on it is released. The latter

item may frequently be justified by the improvement in the final yarn.

The determination of single yarn twist by simply placing a one-inch gauge length of yarn in a tester and untwisting it gives very variable and unsatisfactory results. Unless the non-rotatable jaw is movable, so that the operator may take up the slack in the yarn progressively as the twist is removed, the desired measurement will be found almost impossible of attainment with any precision. Certain testers have recommended that a tension be applied to this jaw and hence to the yarn. When sufficient turns have been taken out, the yarn will break. While such a technique may give data for comparisons of yarns, it very evidently fails utterly to give the full number of twists per inch. Other objections are decidedly minor, but nevertheless present and obvious to anyone who thinks carefully about it.

A modification of the above which has been employed by some workers, is to use only a very slight tension and to have attached to the testing machine jaw guides a scale and movable pointer. The original position of this pointer is noted (this may or may not be "zero"). The yarn is rather rapidly untwisted and twisted up in reverse direction. The use of speed is because of the danger otherwise of the yarn rupturing at or near the instant when the fibers are substantially parallel. When the pointer has returned to its original position, the total turns are read. This value divided by "2" gives the twist per inch. While the theory upon which this scheme is based is quite sound, the fact remains that there is danger of slippage of fiber at even moderate tensions. This slippage is permanent and means that more reverse twist will be required to return the pointer to its original position than was employed on its outward journey. Division by "2" is therefore not strictly correct.

The ingenuity of the instrument builder has minimized the difficulty here until chances of serious error from slippage, friction and inertia of moving parts, difficulties of reading, etc. are largely eliminated. In this arrangement the non-rotating jaw is held quite stationary. At the center of the gauge length of the yarn is placed a sensitively balanced pointer in contact with the yarn. As the latter sags during the removal of twist, the pointer moves away from its initial point and by continuing the rotation of the moving jaw, it is brought back to its original position. The device has the merit of being easily attachable to almost any twist tester without change in it. It is free from the cumbersome mechanism and attendant bothers of jamming, sticking, etc.

Although comparative values of better precision are thus obtainable, any observant worker will agree that none of these methods insure the complete removal of twist. So far as the author is aware, no mechanical means has thus far been devised which will accomplish this end. The difficulty is not in the lack of ability of instrument builders, but rather in the lack of perfection in the yarn. Naps, snarls, short fibers, changes in fiber grouping, lack of parallelism, all contribute. While not perfect, the optical technique already referred to is often to be recommended. The one difficulty is the determination of the necessary constant involved in the formula needed to convert the data to twist per inch. The constant however can be determined by a series of micro measurements which by the author's new techniques are not too difficult of use.

This article is not the place to discuss the optical measurement of twist. Suffice it to say that both twist and twist contraction can be satisfactorily determined when the operator is thoroughly conversant with the fundamentals of the theory. The one great advantage lies in the fact that the yarn need not be cut, untwisted, or injured in any respect for the work.

To summarize:

Direction of twist can be rationally and simply defined.

Ply or cabled twist can be determined with high precision mechanically or optically.

When singles are combined into more complicated structure, their original twists may be reduced, eliminated or increased according to the existing conditions.

The change in twist of whatever amount or kind can be measured.

Correction computations for obtaining either the original of the final state of twist must employ total turns inserted or removed and the changes in length which result. Use of twist per inch is incorrect and misleading.

Finally, single twist in cotton yarns cannot be measured mechanically with high precision.

Lace Hose Take Honors at Retailers' Style Show.

It looks as though plain hosiery is to have a run for its money. First all-over mesh achieves startling success. Now lace tops and all-over lace come to the fore. At the Spring Style Show of the Garment Retailers of America at the new Waldorf-Astoria in New York in January, it developed that more than 25 per cent of the hosiery supplied for the occasion was all-over lace. Because it approximates the weaves and surfaces used in sportwear materials, this all-over lace (the conventional or geometric designs, at least) is being regarded as the hosiery theme for that division. Fancier, "lacier" designs are obviously formal.

With lace tops, the secret of increasing acceptance is originality of the designs. Lace tops in themselves need no justification; they are an added note of luxury to which any woman responds; they are, in many cases, of considerable value as run-stops, too.

But lace top designs that are clever, amusing, even just different enough to be distinguished one from the other, have been a rarity. Recent developments, however, prove that things can be done. Several of the hosiery style leaders have brought out fancy welts which are charming, amusing, and extremely smart.

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Chemical Center in Chicago Established.

The first step in the establishment of a chemical center in Chicago was recently taken when officers of the Chicago section of the American Chemical Society signed a 5-year renewable lease for facilities in the Midland Building, one of Chicago's modern office structures. This gives the Chicago section the use of the Midland Club quarters for meetings. The members of the Chicago Chemists Club took over club quarters on one floor of the building. Change of the name of the building to The Chemical Center is contemplated.

A Study of the Twister Ring

By "Flange"

THIS is a comprehensive discussion of the subject of twister rings. It is divided first into the sub-topics of Wet-Twisting and Dry Twisting, giving information as to the selection, care and cleaning of the rings. It covers also the important question of ring lubrication, and discusses also the relation of traveler to ring, traveler speed.

The figures and practices included are based upon current mill practice under varying conditions . . . . . .

A STUDY of the twister ring resolves itself into consideration of the varied conditions under which the ring operates and the type of ring used to fulfill particular requirements. The twister ring is an especially designed part for a specific work. For that reason broad, general principles and rules cannot be applied to the twister ring as can be done in the case of the spinning ring.

The manufacture of the twister ring is essentially the same as that of the spinning ring.* The structure is likewise the same except that in the heavier types of twister rings greater depth of case-hardness can be obtained without incurring brittleness and **breakage.**

Wet Twisting.

The ring commonly known as the wet twist ring is the band ring, held in a brass plate, as shown in Fig. 1. The standard widths of this type ring are ⅜-inch and ⅝-inch, and the thicknesses 1/16-inch, 3/32-inch and ⅛-inch. Bands wider than ⅝-inch have been

Fig. 1. Band ring in brass plate . .

made but they are not in general use. Also, 5/16-inch bands are being tried by a mill on 140s, the object being to shorten the light bronze traveler and thus get more stock in its cross-section.

It is very important that the installation of the band ring be accomplished properly. The ring is simply a press fit in the brass plate and if the ring does not protrude an equal distance from each surface of the plate trouble will be encountered because of the horns of the traveler dragging on the plate. The rings are sometimes knocked out of the proper setting and any ring so disarranged should be re-set. When bands wear and new bands are to be pressed into old plates the new rings must be made a few thousandths of an inch larger in outside diameter than the old rings to assure a good fit. This is necessitated by the holes in the soft plates becoming enlarged by the pressing in and out of the rings.

The bearing of the traveler on the band ring is limited almost entirely to two parts of the ring. One of these points of bearing is at the bottom of the ring where the traveler is held in contact with the ring by the pull of the yarn. The other bearing surface varies somewhat with the shape of the traveler, some travelers being known as "center bearing", so made that the knee of the traveler bears against the center of the inner surface of the ring. Other travelers have the knee nearer the top and with the part of the traveler below the knee made in line with the knee, so considerable contact surface results. The centrifugal force throws the traveler against the ring so that in all cases the knee and in certain travelers part of the traveler below the knee bears on the ring, but the part of the traveler above the knee does not bear on the ring either inside or outside, if the traveler fits the ring properly, except when the twister is being slowed down preparatory to stopping.

A cross-section of a plate with band ring supporting a traveler in operating position is shown in Fig. 2, at *A* with points of bearing shown at *a* and *b*. Just above the plate at *c* the rings become pitted after having been used for a while, and this rusting and the waviness caused by the bearing of the knee of the traveler prevent band rings from being reversed with any degree of success. Spinners have turned the bands after they have become badly worn, but little extra life is obtained and poor running work is encountered.

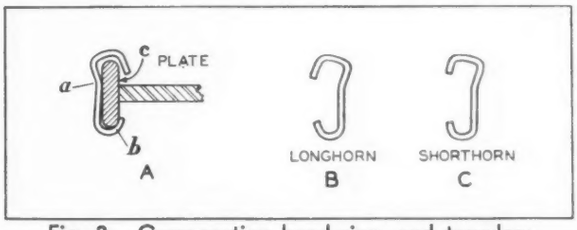


Fig. 2. Cross-section band ring, and travelers.

It is possible to have bands which are not too badly worn or pitted re-worked at a fraction of original cost. This is accomplished by the ring manufacturer by grinding out the waviness, re-hardening, and polishing. Re-hardening is necessary to get the proper depth of case in re-worked rings, and merely grinding out the waves without re-hardening is unsatisfactory. A correctly re-worked ring is not entirely as good as a new one because of the removal of some of the stock, but as for hardness,

(*) The spinning ring, its manufacture, selecting the right ring for any given work, the tendency toward narrower flanges, installation and care of rings, were discussed in a competent article, by "Flange," which appeared in the October, 1930, issue of COTTON. Copies of this article, in reprint form, will be furnished to those requesting them.—The Editor.

uniformity, and finish, the re-worked ring is as good as new. It is evident that a shorter traveler is required for such rings and for that reason all rings in the twister room should be re-worked as nearly as possible at one time. Also, the plates into which the re-worked rings are to be replaced usually require a little peening to enable them to hold the rings securely.

Some spinners settle on one style of bronze traveler and use this style throughout the life of the band ring. A better practice is to use gradually shorter or closer fitting travelers as the rings wear. This enables the mill to get longer service from the bands and keeps travelers from flying off worn rings so easily. It is first hand experience that one twister room required a box of travelers a week, whereas changing the style of traveler reduced this item to one box to every five weeks. When shorter-bodied travelers are used the top horn must be shortened to prevent dragging on the plates, and this horn can be inclined more nearly to the vertical to prevent the short horn slipping over the ring. In Fig. 2, *B* and *C*, are shown the long and short horn travelers respectively.

Fig. 3. Vertical ring.

Cleaning Band Rings.

The question of the best way to clean band rings is not an easy one to answer. Because the rings must be greased to lubricate the travelers, and to prevent rusting, a great deal of lint and gum collects around the plates and in the recess formed beneath the plates. The usual practice is to wipe the top of the rails and the rings with clean, dry waste when the twister is being creeled. Regarding the cleaning of the bottom of the rails and of the rings and plates it is interesting to observe the tendency of the last several years. Boiling the rails, complete with rings and plates, frequently in a caustic solution, was the generally accepted method of cleaning a few years ago. Now more and more spinners are resorting to blowing out the gum with compressed air and supplementing this with "elbow grease" rather than risk the rusting and roughening of rings often encountered after boiling.

Mills have been troubled with rusting of bands where frames have not been operated for some time. A few mills, making a great variety of yarns and having some frames withheld from production from time to time, have had so much trouble with bands rusting that chromium plating has been resorted to. This cannot be unreservedly recommended. If copper could be used between the chromium and the ring, rusting would be eliminated, but putting a soft metal between two hard ones is not good practice in ring manufacture. Cadmium resists rust when applied to steel or iron but is too soft to be of value in plating rings. The best and least expensive rust-preventive that comes to mind is a good coating of acid-free grease on the rings when not in use.

A type of ring coming into more general use for wet twisting of the coarser numbers and heavier plies is the vertical ring, Fig. 3. This ring requires no plate holder, the shoulder of the ring seating on the rail and a screw through the side of the rail holding it in place. The base of the ring where the screw seats is sometimes made tapered from bottom to top so that the pressure of the retaining screw will tend to draw the ring more firmly into the rail.

The standard widths of the vertical ring run from ⅝-inch to 2½ inches. As narrow as 5/16-inch vertical rings are used but these are held in cast-iron or steel plate holders and so nearly resemble band rings that treatment of them would mean useless repetition. The vertical ring is preferable to the band, where it can be used, because of its fixity in the rail; it is more economical because no holder is required, is of stronger construction, and allows rails to be cleaned more easily.

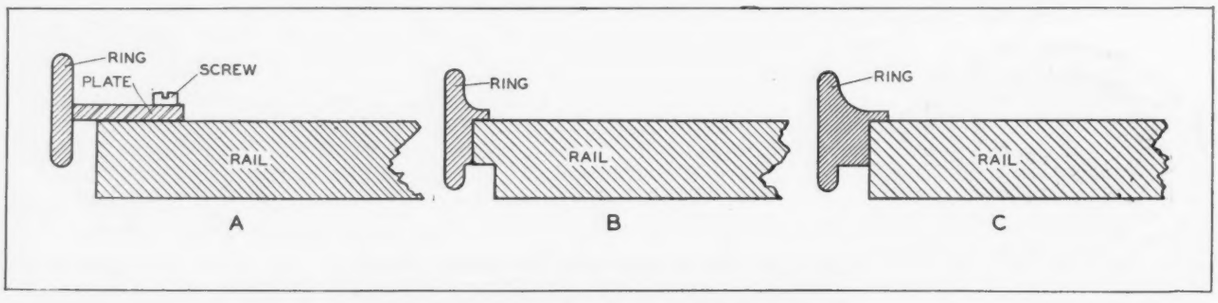


Fig. 4. Cross-sections of rail and different rings.

The width of the vertical ring is the factor that limits its use. The ring must be wide enough to protrude through the bottom of the rail in order to give the traveler clearance. Even with the rails counter-bored a ring with ⅝-inch width is required unless a holder is used.** Fig. 4, *A* and *B*, shows a cross-section of ring rail with band and vertical rings inserted and shows why the rail must be counterbored for the latter. Where the ring size and rail bore have permitted, thick shouldered vertical rings have been used to give the proper clearance for traveler between ring and rail. The use of such thick-shouldered rings, under the conditions stated, is illustrated at *C* in Fig. 4.

With reference to the width of the vertical ring,

(**) Since this article was prepared the author has found one lot of ½-inch width vertical rings successfully installed by very careful machine work. Whether this can be accomplished generally is doubtful.

the traveler of a given weight that fits the 5/8-inch ring has so much less stock in the cross-section than the traveler for a 3/8-inch ring that for fine work the ring cannot be used. One mill is twisting 80s/2 to 100s/2 on a 5/8-inch vertical ring, diameter of ring 1¾-inch, spindle speed 7,400 r.p.m., but this is very unusual, and some trouble is encountered on account of the flexibility of the travelers. A certain mill replaced more than 5,000 3/8-inch width bands with 2¼-inch vertical rings, 43/64-inch wide, for twisting 36s/3, and the installation has been most satisfactory. Another mill is twisting a 19-ounce knotless package of 30s/2 on a 3¾-inch vertical ring 5/8-inch wide, and a spindle speed of 5,000 r.p.m. There is no reason for installing 5/8-inch bands in expensive brass plates instead of using the vertical ring, and whenever the work is heavy enough, say coarser than about 50s/2 or 60s/3, the vertical ring is heartily recommended.

Dry Twisting.

Dry twisting is often accomplished on the single or double flange ring held in cast-iron or steel plate holder. This is the same type of ring as is ordinarily used for spinning. Whereas the spinning ring is made usually with an overall height of 5/16-inch, the twister rings in the larger sizes are made in 3/8-inch and 7/16-inch heights. This increased height is often required to give the large travelers used for heavy work sufficient clearance above the holders, and, where travelers drag on the outside of the ring web, to allow the travelers on reversible rings to make separate tracks.

The common ring, Fig. 5, is more generally used for dry twisting. This ring is made complete, base and flange, from one piece of steel and is consequently a sturdy ring. As wide as No. 9 flange rings are used regularly by asbestos twisting plants as well as by mills twisting heavy plies of cotton yarns. As in the case of the single flange and reversible rings it has been found advantageous to increase the height of the flange of the common ring above the shoulder. To give an idea of the different heights and styles mentioned, cross-sections, drawn to scale, are shown in Fig. 6.

Fig. 5. Common ring.

Selecting the Proper Size Ring.

Determining the size ring with which to equip the twisters in a certain mill is a problem peculiar to that mill. The range of numbers and plies to be twisted, the class of stock used and the resultant strength of the yarn, the quality of plied yarn required, all must be considered, to say nothing of those ever-present considerations of gauge of frame, length of traverse, and speed of spindle. An interesting installation is that of 3½-inch, No. 6 flange rings being used for a range of numbers from 8s/3 to 20s/2. Another is found in a mill twisting 7s/3 to 13s/2 on 4⅝-inch, No. 6 flange rings, and 7s/8 on 5⅝-inch, No. 6 flange rings. This mill tried No. 4 flange with poor results. Mills experimenting with wider flange twister rings than are usually used for certain requirements find in the wider flange the advantage that the travelers run in a more upright position and do not bind when starting up. The wider flange and increased stock induces longer service from the rings. A mill using 3½-inch, No. 4 flange rings for twisting 8s/3 found it advantageous to use No. 5 flange and has standardized on that width.

Mills dry-twisting 20s/2 and finer have ring and traveler problems comparable to those of the spinning room. But when heavier counts and plies are twisted other problems than those of spinning are encountered and these require some discussion.

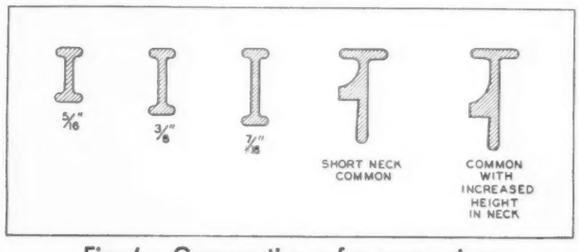


Fig. 6. Cross-sections of common rings.

Calculating the peripheral speed of the traveler, that is, its speed around the ring, seems elementary to many, but because it will be referred to often in this article it is thought best to state briefly one way it is done. The ring diameter, say 4 inches, multiplied by 3.1416 gives the ring circumference, 12.5664 inches, or 1.0472 feet. This multiplied by a spindle speed of, say 4,000 r.p.m., would give as the speed of the traveler 4,188.8 feet per minute if the traveler made as many revolutions as the spindle. But the traveler lags sufficiently to allow the winding on of the yarn delivered by the surface speed of the delivery roll. Assuming the roll is 1½-inch in diameter, or .393 feet in circumference, and makes 120 r.p.m., then it delivers 120 multiplied by .393, or 47.16 feet of yarn. There is some contraction in the length of the yarn in twisting, depending on the twist inserted, and if we put this at 3 per cent then we have 47.16 feet less 3 per cent or 45.75 feet of yarn per minute being wound on the bobbin. This is the amount the traveler lags behind the spindle, so that 4,188.8 feet less 45.75 feet equals 4,143.05 feet per minute, which is the peripheral speed of the traveler.

The experience of many mills has established 4,200 feet to 4,500 feet per minute traveler speed as the highest that can be obtained on a common ring without lubrication, on work as heavy, say, as 8s/4. When twisting heavier counts and plies this speed is not obtainable. The centrifugal force and con-

sequently the bearing and friction of the traveler on the ring are directly proportional to the weight of the traveler and the square of the velocity, and inversely proportional to the radius of the ring, so that it is evident that the speed a traveler can be run on a common ring without lubrication depends upon conditions. For example: A mill recently tried to run 8s/7 with a traveler speed of 3,700 feet, this being on a 5½-inch, No. 6 flange ring and a 48-grain traveler. The travelers burned off. But they could very successfully run 9s/4 on this layout, but with a 30-grain traveler, the travelers running a month before requiring replacing.

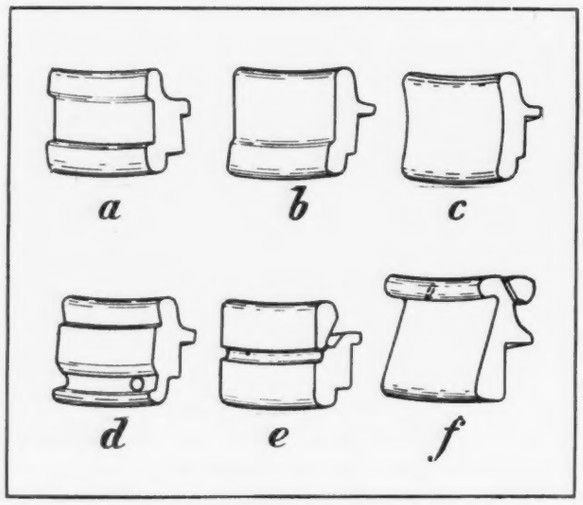


Fig. 7. Methods of ring lubrication.

In equipping twisters for heavy work it is a problem whether to use common or vertical rings. From the experience of many mills this deduction is made: If the work is heavy enough that greasing of the rings is required, whether the common or vertical ring be used, best results as to travelers and ring life can be obtained by use of the vertical ring. For instance, twisting 8s/13 at normal spindle speed, say 2,800 r.p.m., requires greasing of either common or vertical rings. Also, if high spindle speed is necessary on lighter work, say 9s/5, where lubrication of the traveler would not be required at standard speed, but where the increased speed demands that lubrication be provided, the vertical ring will give better service than the common. Summarizing, where the work is light enough and the speed is low enough that lubrication is not required, use of the common ring is preferable; on heavy work and high speeds where lubrication is required, the vertical ring is better. Incidentally, a vertical ring must be lubricated for any work at anywhere near normal speeds.

Methods of Lubricating Rings.

An idea for lubricating a common ring is shown in section at *f*, in Fig. 7. The oil is put in the groove in the flange and flows to the bearing surface underneath the inside of the flange through small passages. Holes lead to the outside of the flange also. The writer has seen only one of these in operation, and that in an asbestos mill, the oil passage in that ring being clogged up.

While certain types of self-lubricating vertical rings are used successfully for wet twisting yet these rings are encountered more frequently in dry twisting and for that reason discussion of the interesting ideas and problems connected with them has been reserved until this time. In Fig. 7 are shown several types of self-lubricating rings. The rings *a*, *b* and *c* have as their central idea the grease retaining feature. It will be seen that *d* has the added feature of holes through the bottom groove so that the lubricant can get to the outside of the bottom part of the ring where the traveler is held in contact with the ring by the tension of the yarn. These grease-retaining rings have found favor with several mills, the claim being made that somewhat higher speeds can generally be successfully maintained and that sufficient grease can be put into the grooves to insure against the rings running dry between doffs. The objection is heard that the grooved rings cannot be kept as clean as the plain rings and that passages to the outside of the ring, as in *d*, quickly become clogged and are of no value. A superintendent using the type shown by *d* says a spindle speed of 5,200 r.p.m. can be obtained on a 3½-inch ring and 3,200 r.p.m. on a 5½-inch ring. These speeds represent traveler speeds of approximately 4,700 feet and 4,550 feet respectively. He states that these rings are cleaned, every 75 hours when a beam runs out and are greased every 13 hours or every doff.

The ring shown at *e* in Fig. 7 is made with the groove or recess around the shoulder of the ring into which oil is poured, the lubricant finding its way to the inner and bearing surface of the ring through holes drilled for the purpose. Such a device cannot furnish a positive feed because of the stoppage of the oil passages.

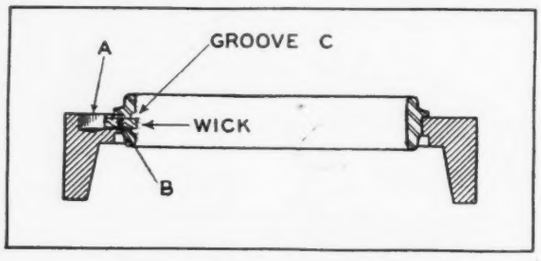


Fig. 8. Wick-oiling device.

The illustration which is seen in Fig. 8 shows a wick-oiling device. From the depression *A*, which is made in the rail to act as an oil reservoir, a wick leads through a passage in the rail to the hole in the ring at *B*. The knee of the traveler flicks the wick in passing over it, thus getting a little lubricant each revolution. Because this hitting the end of the wick caused an irregularity in the traveler motion and consequent wear of the ring just beyond the wick it was found advisable to make a groove, *C*, to diminish the force of the contact between the wick and the traveler.

Several mills report favorable results from use

of this device, but because there is considerable difference of opinion as to its merits it is thought best to express a summary of the views of its advocates and opponents.

The advocates of the device claim more constant and uniform lubrication of the traveler and ring; less friction, as evinced by cooler rings and rails at high speeds; uniform elasticity and elongation in the plied yarns; more uniform twist; economical operation because of ability to oil the rings while the frame is operating; and more economical application of lubricant than is possible with the plain or grooved vertical ring. The bugbear of wick-oiling devices, that of carburization of the wicks when in contact with the travelers, is said to have been greatly reduced by an especially fabricated wick that requires clipping or renewing only at long intervals.

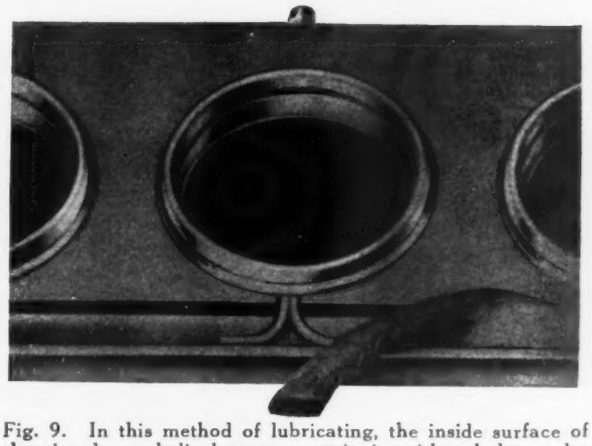


Fig. 9. In this method of lubricating, the inside surface of the ring has a helical groove cut in it, with a hole or slot piercing the wall of the ring. A wire spring with a tubular wick threaded on it fits closely into the groove, and the ends of the wick pass through the ring wall. The rail is grooved, and the groove fitted with felt to act as an oil reservoir. The ends of the tubular ring wick rest under this felt. The rail felt is oiled, and the oil feeds to the wick inside the ring.

A superintendent conducting a test on plain vertical and single point wick-oiling rings found on a 128-spindle twister with 4½-inch rings the average horse-power consumption on the plain rings to be 10.29 and only 8.95 on the wick-oiling rings. One mill using both the plain and wick-oiling rings for twisting some 10-ply yarn discovered that the yarn twisted on the wick-oiling rings had ½ turn more twist per inch than that twisted on the plain rings. This variation in twist is considerable when only a few turns per inch are inserted in such heavy yarn.

Two reasons for this variation are apparent: (1) the improperly, insufficiently lubricated ring caused the motion of the traveler to be retarded thus inserting less twist as well as stretching the yarn and thus cutting down the turns per inch; and (2) enough traveler drag on such heavy work can cause slippage of the tape driving the spindle.

Those with whom the wick-oiling device shown in section in Fig. 8 has not found favor contend there is irregularity of oil flow because of the variation in the temperature of the rings; that oil will drip from the wicks when the frame is not being operated; they raise the previously mentioned objection of carburization of the wicks; and state that variation in elasticity and elongation of the plied yarn result because of the varying amounts of lubricant supplied.

The illustration appearing as Fig. 9 shows another wick-oiling device which has some novel features claimed to obviate the objections stated in the preceding paragraph. A milled channel in the ring rail holds a felt pad that acts as the oil reservoir. Around the inner surface of the ring is an annular groove in which is embedded a wick tubing, this tubing being held in place by a spring wire which it covers. Through a radial opening in the ring this wick tubing protrudes into the reservoir channel, thus making continuous oil flow from the pad to the inner surface of the ring. A clever feature of this device is that the groove is cut obliquely thus giving good distribution of the lubricant from the knee of the traveler to the bottom of the ring. As the wick encircles the inner surface of the ring there is little possibility of stoppage of oil flow, while the felt pad acts as a positive reservoir to prevent feeding of oil when the frame is not in operation. A slightly different shaped traveler is used on this type ring than is generally used in that the knee of the traveler comes about 1/32-inch above the highest point of the groove. The oil seepage from the wick caused by the vacuum created by the motion of the traveler, provides a thin film of oil that gives sufficient lubrication. The traveler does not come in contact with the wick, thus eliminating the possibility of the carburizing of the wick, but gets the oil entirely by the vacuum or suction it creates. Tests to date in this country have shown the efficacy of this device, and in England, where the idea originated, it is being adopted rapidly in fine and coarse twisting operations.

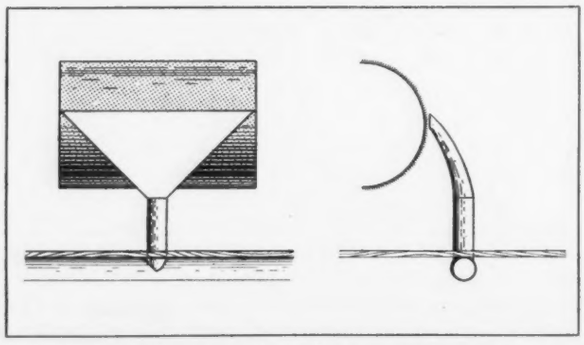
In general it can be said that the grease-retaining rings and the wick-oiling rings are preferable to plain vertical rings for heavy twisting, and for large package twisting of fine numbers. None of the devices is fool-proof, all require a certain amount of intelligent attention and care, and given this will repay the mill for the expense and trouble incurred. It is the writer's opinion that the wick-oiling type of ring is more effective and efficient than the grease-retaining ring. Grease is a necessary evil where a bearing will not hold oil, and the ideal lubricating condition is a thin film of oil between the bearing surfaces. Probably not more than one-fifth of the grease put on rings gives lubricating service; the balance is thrown off on rails, bobbins, and floors. It is the purpose of the wick-oiling ring to put the proper amount of oil at the right place.

In addition to proper lubrication where required, the same rules that apply to the care and operation of spinning rings apply to twister rings. Elimination of vibration in the frames, properly set spindles and guides, true-running bobbins, etc., etc., mean longer and more satisfactory service from twister rings than can be obtained where frames are not properly maintained.

Re-Running Waste, Strippings, Etc.

WITH EVERY MILL the method of properly distributing the workable waste, i.e., rovings, scavenger, etc., that has to be put back into work, has always been a good deal of a problem. Regardless of the efficiency of the plant, both in equipment and management, every superintendent is faced with this problem of how best to work back his waste, with the least detriment to the running of his work, and the minimum loss in breaking strength. Naturally, the more waste that a mill makes—tangled bobbins, excess roving not run off in the spinning, and scavenger waste—the greater the problem becomes.

It is taken for granted that no mill properly managed today, allows roving to be cut off the bobbins, either in the card room or spinning room, the bobbins being cleaned through a bobbin cleaning machine, which seems to inflict the minimum amount of damage to the fiber, or running the bobbin as low as possible in the spinning room and twisting off the few rows of roving by hand. Some mills have even attempted to require the spinners to run the bobbins bare, though of course this is not accepted as practical or good practice, as the resulting ends down means loss of production, bad piecing-up and subsequent trouble in the following processes.



Front and side view of mouth-piece to be fitted on card doffer, as described in this article . . .

Assuming then that we have this waste roving from both the spinning room and card room and the scavenger from the spinning, the problem that we are all faced with is to so mix and blend and proportion this waste, and to put it back into stock with least damage to itself, and consequently to the resulting product all along the line.

Many different mills have their own ways of handling this problem. Practically all "tear it up" (and the term "tear" is literal) through some form of waste machine, which is not necessary to describe here. Suffice it to say that none of these machines do the staple any good, but they seem to be necessary evils, as we have found no other way to handle it. The writer has visited mills where old discarded pickers were used for this purpose, and the quality, evenness and running of the work loudly proclaimed the fact.

Even though this waste be torn up by the most modern machines (the best of which injure it) we still have the problem of the best way to get it back into the work, and especially in an even proportion. Here again every mill man has his own particular ideas as to how this should be done. We have seen this mixed right on the mixing pile, which of course is absurd and is seldom done, though occasionally one will see it thrown right into the hopper; others make laps of it separately or mix it with a small amount of cotton, tear it up and throw it on the mixing pile; still others make laps of it and mix these laps either on the intermediates or finishers and run it through in this manner or take the resultant lap and tear it up and put in with the regular mix. In some cases a mix lap is made, blended in such proportion as the carder thinks the work will stand and kept separate on the cards and drawing and coarse fillings made from this.

While all of these methods, and others have been employed, occasionally the percentage of waste that gets in will be entirely too great, and the spinning room will feel it very badly, and uneven numbers are bound to result, and the breaking strength suffer.

The writer wishes to describe a method that he has employed with considerable success, that comes nearer solving the problem than any he has seen, one that is very simple and applicable to any mill. The individual mill may find it necessary to vary this slightly to meet their individual conditions.

Before explaining this method and how we handled it, the writer wishes to state that the system was not original with him, though certain applications and changes in it were.

Besides wanting to properly distribute the workable waste, and to be certain that the same proportion or percentage was going back in the work at all times, which was primarily our object, we believed that we could salvage quite a little of our strippings, without detriment to our work or the appearance of our roving as to cleanliness. Every carder knows that with our present-day card, in removing the short fibers, motes, etc., we also take out a considerable amount of full length fibers, but these are so matted or entwined around the others it is not possible to separate them. Re-carding strips is of course nothing new, but to re-card them and run them right along back with the regular stock with no detriment to the running of the work, the breaking strength or the cleanliness, has not been regarded as practical. We did this, and any mill can do it that cares to make the necessary arrangement, which is very simple and inexpensive.

Briefly, the way we accomplished these two objects, feeding the workable waste back in an even percentage and re-working a portion of the strips, was as follows: We first ran our rovings and scavenger waste through a regular W-3 waste machine, and fed it into a fireproof waste chamber. At a stated time each afternoon we made our waste mix, using about equal parts of this re-worked waste and strippings and about one half this quantity of cotton to prevent the

laps splitting too much and make the stock work or blend better. We tried first without any cotton, but found we could not get results from this. If we had any bales in the day's mix not fully up as to staple color or evenness we used these in making the waste mix. This mix was run through our regular opening system, consisting of a bale breaker, vertical opener and Centrif-air machine, through the condenser and distributed into the hoppers. This was lapped in the regular manner, through the intermediates and a finisher waste lap made. This was then ready to be carded. Here is where our system comes into play.

The coilers and doffer combs were removed from the number of cards that we wished to employ for this purpose, two in our case, which handled our waste and a good portion of our strippings from 70 cards very nicely. After the coilers were removed, we had a flat mouth-piece fitted in front of and about ½-inch from the doffer converging into a 5-inch pipe at the bottom. This was of sufficient gauge material not to "belly," but remain in place, and was attached to the card at one side behind the comb box and to the frame on the other. The bottoms of the mouth-pieces, being 5-inch pipes, were run through the floor and this line run to the main conveyor pipe about four feet in front of the condenser, considerably in front of the delivery from the Centrif-air machine.

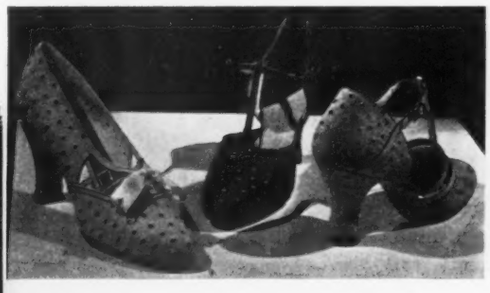
The waste lap was made considerably heavier, the card speeded up and the fan also increased in speed to handle the five-inch line from the two cards. The air current stripped the web nicely from the doffer and it was blown into the condenser line in an even well-blended mix, the same amount going in at all times. The settings on the card were slightly wider, which would have to be determined by the local conditions. It was found that the cards doing considerably more work required to be sharpened much oftener and stripped considerably oftener. Occasionally the cards would choke up, but by stopping one of them off, the air current would handle the other and unstop it. Occasionally they had to be unstopped by hand. On the whole, however, the system gave no trouble whatever. The waste cards were never started, of course, until the opening system was in operation, usually about 15 or 20 minutes after.

In this way the same amount of waste was constantly fed back in the mix, and the improvement in the work was very apparent. As we were opening about 1,000 pounds of cotton per hour and feeding in only about 40 pounds of waste, blended as it was, the percentage was so small as to be negligible. Our breaking strength increased, a great deal less ends came down and the numbers were much more even. Our average yarns were about 18s single creel, and the work ran exceptionally well.

Different mills can of course change or vary this to suit their own conditions. Even if they should not want to run back any of their strippings, though this would not hurt them, they would be assured of getting their waste fed back into stock in a constant amount at all times.

The system is so simple, so inexpensive, and the results are so satisfactory, that it will pay any mill to investigate this.

New and Stylish Uses for Cotton



The above photograph of shoes was furnished by the Durene Association of America, and shows durene fabric being used in a new way. The fabric is known as Durene Caroa and is made by J. & H. Lehmann. Interest is growing in this and similar uses of durene fabrics, in handbags, etc.

At extreme left, a Cotton-Textile Institute photograph shows a white organdie "end-of-the-day" dress with a fashion importance for the coming spring and summer.

The photograph in the center shows a new quality use for durene in the William Carter spring foundation line, "Spiroflex", a new all-in-one garment made entirely of durene covered elastic with attached bandeau in Francois durene net.

Uses of Phosphates in Textiles

By Noel D. White

THERE is a noticeable lack of concrete and practical information on this subject in the available literature on textile chemicals and chemistry. Mr. White here discusses di sodium phosphate and tri sodium phosphate from the viewpoint of the practical textile chemist, and has provided information as to their uses, applications and the methods of their application, in a manner which is very readable and useful . .

THE PHOSPHATES most commonly used in the processing of textiles are the disodium and the trisodium. Disodium phosphate, generally called "phosphate of soda", is used as an aid to the dye bath when mixtures such as silk and cotton, silk and rayon, wool and cotton or rayon, and any fabric composed or two or more of these fibers are involved. Being a mild alkali it serves the purpose of retarding the absorption of dyestuffs by the animal fibers and increasing the affinity of the dyestuffs for the cotton and rayon in the mixture.

The phosphate is entered in the dyebath after the dyestuffs have been added, and after the goods have been allowed to boil about twenty minutes in it before any salt or Glauber salt is entered into the bath. In this way the bath is made slightly alkaline by the phosphate, a condition properly suited to retard the action on the animal fibers by the direct dyes which are mostly used in dyeing that class of goods.

Some caution must be exercised in the use of phosphate of soda in this case, not to use to excess. The usual amount is ¾ to 1 per cent of the weight of the goods. Using more of it would not only be wasted, but even though phosphate is very mild in reaction, the alkalinity of the bath will be enough to decrease the affinity of the dyes, for the animal fibers and more dyestuffs would have to be used than would be necessary. If a system of pH control is on hand, it is well to find out the right degree of alkalinity which gives best results, and adhere strictly to it increasing or decreasing the amount of phosphate within the percentages stated.

In dyeing silk hosiery where cotton or rayon and cotton are knitted in it, phosphate of soda is a very valuable aid for correcting shade and union, and to match the different fibers to pattern. Most direct colors used for this purpose dye cotton and silk and rayon almost the same shade when used in a neutral bath, or in a bath made slightly acid with acetic or formic acid. With well chosen dyestuffs in a given formula the silk part of the stocking needs little touching up, and this is done when necessary with neutral or acid dyes, and may be added to the dyebath at any time during the operation. To prevent any possibility of uneven dyeing, an addition of phosphate of soda to the bath will prevent a too rapid absorption of the dyestuff by the silk and insure an even dyeing as it will keep the bath under proper control at all times.

If the color should appear to be too heavy, another small addition of ½ or 1 per cent of phosphate will correct it without materially changing the shades, as would be the case with any of the stronger alkalies which would affect some dyes more than others, disturbing the balance of the blending and making it harder for the dyer to bring it back to pattern.

In bleaching with peroxide of sodium or hydrogen, it has been found that if the proper proportion is used (from 2 to 3 per cent) the bleached goods are left softer and cleaner. The danger of bleaching mixed fibers lies in the fact that under certain conditions the bleach is quicker on the cotton or rayon. That would be desirable as the silk needs but little bleaching, and it is easier to control. On the other hand, if the silk should bleach too rapidly by the time a good bleach has been obtained on the vegetable fiber there is danger that the silk will be overbleached, and that would be disastrous. Overbleached silk acquires a very undesirable brownish cast which is very difficult to correct afterwards. That danger can be minimized by properly regulating the alkalinity of the bleaching bath and the temperature. They both accelerate the liberation of oxygen, which is the bleaching agent in the bath. By keeping down the alkalinity, and the temperature of the bath, bleaching can be retarded at will, and more even results can be obtained on the different fibers. Here, then is where a mild form of alkali like phosphate can be used to advantage providing a correct pH or hydrogen ion concentration is found and adhered to.

A large amount of phosphate is used in weighting silk yarn, and silk piece goods by the tin-phosphate-silicate process. The silk is steeped for one hour in a bath of tin-tetra-chloride, then washed thoroughly, and worked for an hour in a bath of phosphate standing at about 10 degrees Twaddle, at 150 degrees F. temperature, and a slight addition of ammonia to complete neutralizing the acidity of the tin-soaked silk.

As it is usual in this tin-phosphate-silicate method of weighting to load the silk not only to regain the weight lost in degumming, but to add from 20 per cent to 50 per cent and even more to its original weight, it is necessary to give the goods several passes through the tin and phosphate baths. It is most important to keep watch over the behavior of the standing baths in order to obtain satisfactory results at all times. The phosphate bath should at all times be kept at the proper pH concentration, and degree of strength, but especially as free as possible from the contamination of badly-washed goods from the tin bath.

For these purposes none but the best phosphate of soda obtainable should be used.

Trisodium phosphate, a slightly stronger form of phosphate, somewhat higher in alkalinity than the disodium, is used to good effect in the kier boiling of

cotton goods. As an aid to caustic soda it serves the purpose of more thoroughly emulsifying the natural wax of raw cotton, to increase the detergent action of the boiling off liquor, to dissolve and facilitate the removal of all impurities that have been picked up by the goods in the course of manufacture, to preserve its strength unimpaired, as it acts as a buffer against the powerful action of the caustic soda, to prevent stains and to obtain cleaner, softer, better prepared goods, goods that are easier to bleach or to dye.

Tri-Sodium in Kier Boiling.

An addition of 1 per cent to 1½ per cent of trisodium phosphate to a caustic kier boil will shorten considerably the time of boiling, facilitate washing, preventing the formation of grease spots so hard to remove in washing, especially when the water is not of the best obtainable. In this case, a small amount of trisodium phosphate can also be added to the rinsing water to good advantage as it will help to remove the last traces of the saponified oils, greases, and waxes in the boiled goods leaving them in an ideal condition for the subsequent operations.

Boiling-Off Silk.

In boiling off silk, whether piece goods or hosiery, trisodium phosphate is added to the soap or boil-off oil in place of any of the stronger alkalies to prevent harshness in the goods. Its high pH value together with its mild alkalinity makes it a favorite among the dyers of fine silk fabrics. Silk goods boiled off with the addition of this phosphate can be washed easier, quicker, and more thoroughly, even when only calcareous water is to be had. The formation of lime and magnesium soaps, which when allowed to form on the goods, are impossible to remove and will invariably show up in the finished product in the shape of streaks, spots, and uneven dyeing, is effectively prevented.

A small addition of trisodium phosphate in the rinsing water after boiling off, will be found also quite effective in preventing the formation of those greasy pellets usually seen floating in the washing water, and are the result of the breaking down of the exhausted boiling off agent before they are washed out of the goods. If allowed to remain in the goods to be carried in the dyeing bath, they are sure to cause trouble. The small amount needed to prevent this occurence is surely worth the expense involved, as it will keep the water soft all through the operation, saving considerable time, worries and the temper of the dyer.

The great emulsifying power of trisodium phosphate is also made use of to prevent dyeing several shades in a batch of silk hosiery that had been knitted with silk thrown by more than one throwster, or freshly thrown silk which has been unjudiciously mixed and used in knitting with silk that has aged on shelves, and the softeners used by the throwster allowed to oxidize on it.

In throwing silk yarn, the first and most important operation is the soaking to soften the gum and make the silk thread loose and pliable, easy to wind. The soaking solution is usually prepared by dissolving olive oil soap, and adding to it neatsfoot oil, olive oil, or glycerine, to keep the silk hygroscopic, and without removing any of the gum, retaining the moisture for as long as possible. In this solution the silk is steeped for a number of hours at a temperature not to exceed 100 degrees F. In recent years a number of preparations have been offered the throwster to improve the hygroscopicity of this solution, its emulsifying property, its softening quality. Some of them are sulphonated oils or fats, others are mineral oil preparations. Their efficacy is attested by the length of time they remain on the market; as far as the throwsters are concerned they make up and use in their solution what to them is best for their purpose. When their thrown silk is delivered to the dyer in whatever form he gets it, whether in dress goods or hosiery, if those solutions do not come out in its degumming bath there is trouble on his hands. Silk that has been softened with a mineral oil preparation, if mixed with silk prepared with vegetable or animal oil solution, will invariably degum a different shade of white. The mineral oil in the silk will give it a creamish, darker cast that dyeing will not completely cover. A small percentage of trisodium phosphate added to the degumming bath will reduce this uneven cast in the boiled off fabric better than anything else yet tried.

The same may be said in the case of freshly thrown silk that has been worked in the fabric with some older silk where the throwing or knitting emulsions have oxidized on the fiber, boiling off baths with trisodium phosphate will be found to strip the gum more uniformly than any other agent used to aid the soap or boil-off oil.

Preparing Goods for Dyeing

Trisodium phosphate may be used to advantage in preparing wool or woolen goods to be dyed, and in the fulling and finishing process.

In preparing woolen material to be dyed, the goods must first be scoured free from dirt, natural grease of the wool, and all impurities. This operation must be gone through with very thoroughly, for imperfectly scoured wool will show up in the finished product with a harsh feeling, uneven shades, crocking and bleeding dyeings.

The scouring soap must not be too hot; no higher than the blood temperature. An addition of trisodium phosphate to this bath will make possible a considerable saving of soap, as its high pH is very effective in reducing the surface tension of the soap at its lowest, promoting and keeping a rich and plentiful suds more penetrating and effective, and, what is more important, will wash out of the goods easier, more thoroughly and leave them in a fluffier, softer condition unobtainable with any other alkali.

The assertion that "goods well prepared are more than half dyed" was never truer than in wool dyeing. The use of trisodium phosphate while one of the newest to enter the field of textiles as a scouring agent, is already recognized as one of the foremost by the

woolen dyers because its mild alkaline activity while quite effective is not in the least injurious to this fiber, and can be used both in scouring before dyeing, as well as in the fulling and finishing operations with gratifying results.

In textile processing the use of a system of pH control is coming to be recognized as one of the factors indispensable for steady, consistent results. Avoiding as much as possible rule-of-thumb methods in all processing of textiles, hydrogen ions concentration for the control of acidity and alkalinity of processing bath is recognized as a most important guide.

When the pH of a bath is found to be wanting in alkalinity trisodium phosphate with its high pH value is by far the best medium to correct it. A small addition of it will raise the pH of any bath without materially changing its property, making it a most valuable addition to any well equipped, up-to-date chemical laboratory, as well as a big fellow in any well-regulated dye-house.

Selling Cotton Net Weight

A discussion of some of the problems involved in working out this desired result . . . .

CONGRESSMAN H. P. FULMER, of South Carolina, is the author of Bill H. R. 8559, providing "for the use of net weights in interstate and foreign commerce transactions in cotton, to provide for the standardization of bale covering for cotton, and for other purposes." This bill is attracting considerable attention among the farmers, the mill men, the shippers and others. There seems to be a difference of opinion existing among the farmers although certain groups have endorsed it; certain other groups have not felt so disposed.

The American Cotton Shippers Association seems to have endorsed the principle of net weight but has been opposed to any tare allowance suggested so far in any of the bills. The U. S. Department of Agriculture is reported also to have endorsed the principle of net weight, but has not been able to determine the tare allowance. The Fulmer Bill carries with it a tare allowance not exceeding 16 pounds per bale, including patches. On account of cotton being wrapped in so many different commodities and types of bagging, the various interests making this cotton wrapping are vitally interested and present an entangling situation.

.E. A. Beveridge, cotton specialist of the U. S. Department of Agriculture, in February, 1925, made the following statement:

"All through our system of handling and marketing American cotton runs the incentive to add to the weight of the tare, as far as the rules will permit in the market to which the bale is going. The bale usually comes from the gin with a little over 4 per cent tare on it. When the shipper gets it, he adds sufficient additional tare to bring the total up to about 5¼ per cent, let us say, in the export market. The foreign importer, not to be outdone, tacks on some more tare before delivery to the spinner, the tare finally amounting to perhaps 6 per cent, so that, roughly speaking, there has been added to the bale 2 per cent during the journey from the farmer to the spinner. The consequent economic loss, measured by the amount of unnecessary bagging and ties, and the freight, insurance and other charges paid thereon, has to be borne jointly by the farmer and the consumer.

"Sometimes the farmer, feeling that he, himself. is entitled to some of this leeway between these two extreme tares, puts more than the customary tare on his gin bale. But he seldom gains by this, for it is only by an oversight that the buyer permits the overtare to pass.

'The whole matter revolves itself into this, that each buyer always adjusts his prices in accordance with the amount of tare for which he expects to pay.

"The tare situation is very complex and it is not simplified by the rules of the exchanges themselves, but rather it is aggravated by them because of their different tare allowances. For instance a bale from a market where a 20 pound tare rule obtains may be shipped to one of many domestic or export markets where the tare limits may be anywhere from 24 to 27 or 28 pounds, and the difference in tare will be added when the bale is compressed, even though it may not be required.

State Laws Confusing.

"In some cases the State laws render the situation still more complex. For example, in South Carolina it is legal for a farmer to put 6 per cent tare on his gin bale, or, say, 30 pounds, knowing that the law prohibits the buyer from deducting for or cutting off the excess tare. Yet a cotton mill in the same state may demand that the shipper have no more than 22 pounds of tare on the same bale. In such a case the shipper merely offers a price to the farmer that will take care of the claim he will get for the 8 pounds excess tare and the freight and other charges on this difference in weight."

To try to enumerate the various practices and laws in the cotton growing states, relative to tare, would be too long and too diverse. It is evident, however, that in almost every state, and exchange, and country in which cotton is bought and sold, variations exist. Cotton is practically the only commodity of any consequence that enjoys a world wide distribution that is sold on a gross weight basis. The tare has always been a controversial subject, not only in the American market, but in the foreign market. American cotton has the reputation of being one of the most poorly wrapped, unsightly products that travels through the various exchanges. Therefore, it would seem that the Fulmer Bill, which is very similar to other bills that have been introduced at various times in the National Congress, should demand the serious attention of the cotton farmers and the consumers of cotton, in that, this controversial question and ragged beggar, insofar as wrapping is concerned, may be dressed up in appearance and presented to its buyers with a definitely known tare.

CURRENT TOPICS

Talk of the Month

ONE of the outstanding complaints of last year in textiles was that distributors were ruthlessly hammering for low prices, at the expense of everything else. The latest reports of distributors' attitude is that value, not low prices, is the retail slogan. The year when the depression reached its greatest depth was one when the constant endeavor was to reach down to the purchasing level of the public, with its curtailed buying capacity. Now is the new year of reconstruction and it is a time not only for relief of financial stress but for new building of industry along sane lines; making goods of quality at prices consistent with the low level of costs and at a pace which means a volume that can be sold profitably. Thereby the program of "reconstruction" can be made comprehensive.

The General Situation in Textile Markets.

Certainly the first part of the year has been encouraging for a healthy development in cotton goods. The movement for control of output throughout the industry was quickly productive of a sounder basis of prices. The adjustments of finished goods in various industries around the middle of January had, according to the raw-materials price index of the Alexander Hamilton Institute, been greater than the drop in commodities and the relationships between the two were improved thereby. That authority hailed such a condition, the lessening of the divergence between the two, as the suggestion of an early halt in the general price decline. Subsequent events in cotton and its goods have surely been suggestive of a turn.

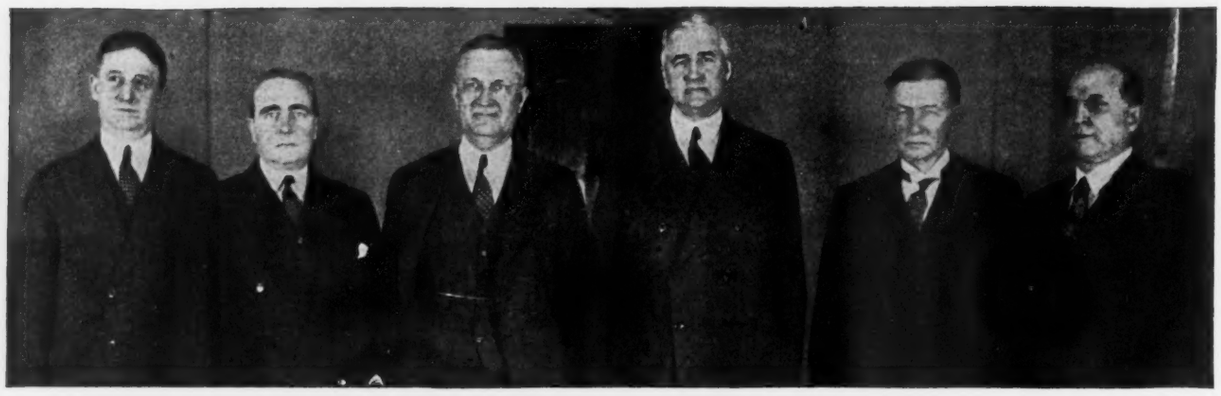
In fact raw cotton early this year began to assume a new position in the eyes of the trade which made it one of a very few commodities with a large supply to demonstrate how the turn of demand works for stability after depression even before the accumulation of burdensome supply has begun to show appreciable diminution. All that is needed for the further stability of cotton is the assurance that the American crop of 1932 will be of moderate size. The law of averages, the lack of normal fertilizer buying, the mild winter (with its equally mild influence on boll weevils) and other factors enter this question, as well as definite measures for reduction of acreage. The likelihood of a short crop and the new pre-eminence which has been gained for American cotton in the outside world have caused a distinct turnabout in the trade feeling toward cotton stability. Thus this staple has held measurably above the fall low while other commodities of overwhelming supply continued to decline right into the middle of February.

With the liquidation all out of raw cotton and goods, mills now must wait merely for the broadening of general industry to round out a healthy position for the future. The automobile industry up to this month failed to develop that broadening which would encourage hopes for the cotton trade along the line of industrial fabrics; likewise with building and other activities. How soon general improvement will expand, either by force of normal circumstances or through the relief measures inaugurated by the President at intervals over the past nine months or more? is a question that will answer itself. Meantime, the manufacturing policy of working on the basis of moderate advance in business the first part of the year augurs the best financial results for a long time.

Cotton manufacturers naturally may take satisfaction in the reports of early in the year that their fabrics are still leaders in the field of fashion. At the same time, it is significant of the need to keep alert that silk, rayon and wool goods are seeking the favor of Dame Fashion with no uncertain effort. By a peculiar twist of things, it is found that silk manufacturers today are imitating, or borrowing ideas from, the wool-goods producers. This situation will not be appreciated until one recalls that wool manufacturers the past two or three years have awakened to the fact that living conditions were relegating drab goods of past eras to the limbo of forgotten things. They were impelled to experiment with light woolens of unusual style and design. How well they succeeded in finding goods to gain the popular favor is clear in the fact that silk men find their lines worth copying. So goes the round of textile competition.

Some comparative statistics on the trend of consumption in textile materials are timely, the source of information being the Tubize Chatillon Corporation. The combined total of cotton, wool, silk and rayon in 1931, in pounds, was 3,562,000,000; the figure in 1930 was 3,414,000,000; the volume in the peak year of 1927 was 4,554,000,000. The shares of the different materials in 1931 were cotton, 75.9 per cent of the total; wool 17.7 per cent; rayon 4.2 per cent and silk 2.2 per cent. The *Textile Organon*, organ of the Tubize-Chatillon Corp., says that the consumption of cotton increased about one per cent per annum in the last ten years; wool fell about two per cent a year, silk increased 7 per cent annually and rayon about 23 per cent a year.

Since the January meeting of cotton manufacturers with Secretary Lamont, wherein the resolutions in favor of voluntary control of operations on reasonable basis were passed, there have been outbreakings of action here and there on legislative measures for control. On one side, a hearing was held in Boston asking the Massachusetts legislature to memorialize Congress for a constitutional amendment on equal hours of labor. However, Virginia industrialists were reported as contesting a Senate bill for restriction of women's work to 48 hours; Wisconsin textile concerns were petitioning for a lifting of restriction on night work by women; a special commission in Rhode Island took a stand against proposed legisla-



Reconstruction Finance Corporation Board, left to right: Paul Bestor, Ogden Mills, Harvey C. Couch, Jesse H. Jones, Charles G. Dawes, pres., Eugene Meyer, chairman . . . . . .

tion for restriction there. These cases, spread over dissimilar areas of the United States, indicate that the prospect of national legislation is remote.

MOST IMPORTANT of the steps taken by the federal government to stop deflation and turn the tide of business upward is the organizing of the Reconstruction Finance Corporation, which already is functioning and is passing upon the first applications for loans from banks and railroads. This organization is not a new and untried experiment. Confidence in the effectiveness of the work it will undertake is justified by reason of the fact that it is patterned very closely after the War Finance Corporation, which accomplished such notable results in stabilizing business and credit in this country in the years immediately following the world war.

Governmental Measures to Stimulate Business.

The chief purpose of the Reconstruction Finance Corporation plan is to restore the confidence which is so necessary to business recovery by strengthening our banking structure and making necessary credit available to railroads and insurance companies. The Corporation will make funds available to solvent banks which will enable them to withstand panicky demands of their depositors. In the past year or two, hundreds of ably managed banks have been forced to close their doors because in the face of such demands they could not immediately realize on sound but temporarily "frozen" assets. Other banks with conservative loans on their books but which could not be collected on short notice, have been forced to liquidate a large volume of securities at sacrifice prices, which in turn has so depressed the security market as to weaken all other financial institutions.

With the Reconstruction Finance Corporation supporting our banking structure, it is expected that the panicky demands of depositors will subside and hoarded funds will return to the banks. And when there is no longer the necessity of dumping sound securities on a demoralized market in order to raise cash to meet the demands of nervous depositors, the bond market should be stimulated to the extent that all financial institutions will be greatly strengthened. Furthermore, it should then be possible for railroads and industries to again raise necessary funds through bond issues. Ordinarily between seven and eight billion dollars of bond issues are sold each year, but the volume sold this last year has been almost negligible.

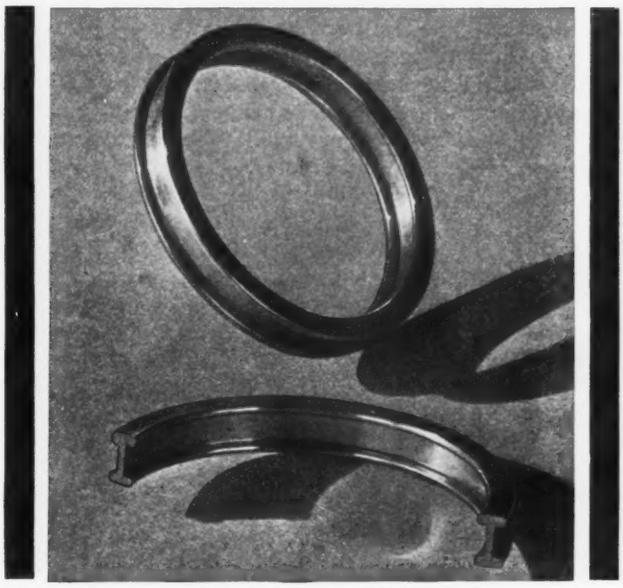
There has been some tendency to believe that this new government credit plan may be a step in the direction of inflation. However, this belief is contradicted by Government and Federal Reserve officials. The plan is described as merely one of strengthening our banking credit structure and restoring confidence. As confidence is restored and business revives, there should of course be some increase in commodity prices and bank credit; for most commodity prices are now at absurdly low levels, while bank credit has been restricted far beyond normal requirements.

To produce a real inflation would require a large issue of fiat money by the government, a change in the value of U. S. currency, or huge issues of government securities—none of which is in prospect. The Reconstruction Finance Corporation is limited to a half-billion-dollar capital stock and can sell only a billion and a half more in bonds and debentures. And while some additional government bond issues may be in prospect during the coming year, the volume will be relatively small and the aim is to balance the budget instead of financing governmental operations by additional bond issues.

In active charge of the new Finance Corporation are Charles G. Dawes as president and Eugene Meyer as chairman of the board. Mr. Dawes has a world-wide reputation because of his various activities as a banker, Comptroller of the Currency, first Director of the Budget, originator of the "Dawes Plan" for rehabilitation of Europe, Vice President, Ambassador to England, etc. Mr. Meyer is governor of the Federal Reserve System and was Director of the War Finance Corporation during the war and post-war years.

Let's Stop Hoarding.

Another very important governmental activity is the inauguration of a nation-wide campaign against hoarding of currency. The objective is to restore the confidence of every community in its financial institutions, to point out that every dollar hoarded destroys ten dollars in credit, and to stress the fact that it is a patriotic duty to put hoarded money back in circulation through bank or postal savings deposits and the purchase of government and other sound securities.



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With a national campaign inaugurated at the very time that the new Finance Corporation is acting to stabilize the banking situation, there is every prospect that this activity will be successful and thus result in a large addition to the nation's credit facilities.

Textile manufacturers occupy a responsible position in the education of the people of the country to the desirability of putting every available dollar to useful work. As employers of large numbers of workers, a logical appeal to patriotic impulses of the average American can be made. Many textile manufacturers hold positions in other businesses in their communities, and so can wield a broadened influence. There have been reported a number of instances, particularly in small cities, where financial hysteria has been completely wiped out by the timely counsel of a few wise heads. The same formula can be applied to the problem of hoarding, and, as stated, the average textile manufacturer has an exceptional opportunity to exercise an influence within his own organization and among other enterprises of a local nature with which he is associated.

New England Mill Situation.

COTTON MANUFACTURERS in New England have been doing a larger business so far this year but holding to a cautious spirit regarding the permanency of betterment and the prospects of broad expansion that will mean good profits as well as active occupation of machinery. The progress of manufacture was somewhat indicated early in February by a larger inquiry for raw cotton and a fair actual demand for some grades of staple. For many months the economic reporters have found New England relatively the best situated of any of the Nation's geographical division. This has not meant prosperous conditions in the northeastern area, but it has been at least encouraging.

Not long ago Dun's Review reported that the improvement in the position of the wool, shoe and cotton trades, which are the major industries of New England, tends to give an impetus to business and is responsible to a considerable extent for the betterment made when compared with other sections of the country. In Massachusetts the shoe industry leads, but wool and cotton manufacture as a whole is substantially above the shoe production. There were reports more than a month ago that the demand for cotton goods was sufficient to inspire stepping up of plants and individual instances were recorded of increasing schedules, though manufacturers were reluctant, it seems, to make overmuch of favorable news lest something of last year's false start be duplicated.

With merchants tired to death of the plague of price, price, price, it seems to be a propitious time for propagation of the idea of quality. Even before the end of 1931 New England manufacturers of fine cottons were giving much attention to saner production, on the basis that this is the only way to reasonable profits. They have lately been giving attention also to cost systems. Ralph E. Loper, president of the Ralph E. Loper Company, in a recent communication from Fall River, sent to manufacturers North and South, stated that more than 100 mills had installed cost systems either through the Cotton-Textile Institute or industrial engineers and cost accountants during the year preceding.

"Manufacturers throughout the industry," he said, "have been paying an increasing amount of attention to budgetary control during the past few years and 1931 with its declining raw cotton markets and demoralized goods markets has seen accurate cost finding methods in more general use than ever before. During the next few years mills will profit through installing standard costs systems. This type is especially adapted to use of budgetary control and the adoption of budgetary control leads to substantial economies in manufacturing costs which are now more than ever before of vital necessity."

Among the notable developments in the executive end of the cotton industry in this district is the appointment of Col. G. Edward Buxton of Providence as head of the prominent Maine chain consisting of the Edwards Mill, of Augusta, Androscoggin Mill, of Lewiston, Bates Mill, of Lewiston, Hill Mill of Lewiston and York Mill of Saco. The products of this group are all marketed through Bliss, Fabyan & Company of New York. Col. Buxton will continue to head the B. B. & R. Knight Corporation and Fruit of the Loom Mills, Inc., of Rhode Island and will have Weston Howland associated with him to run these, it is understood.

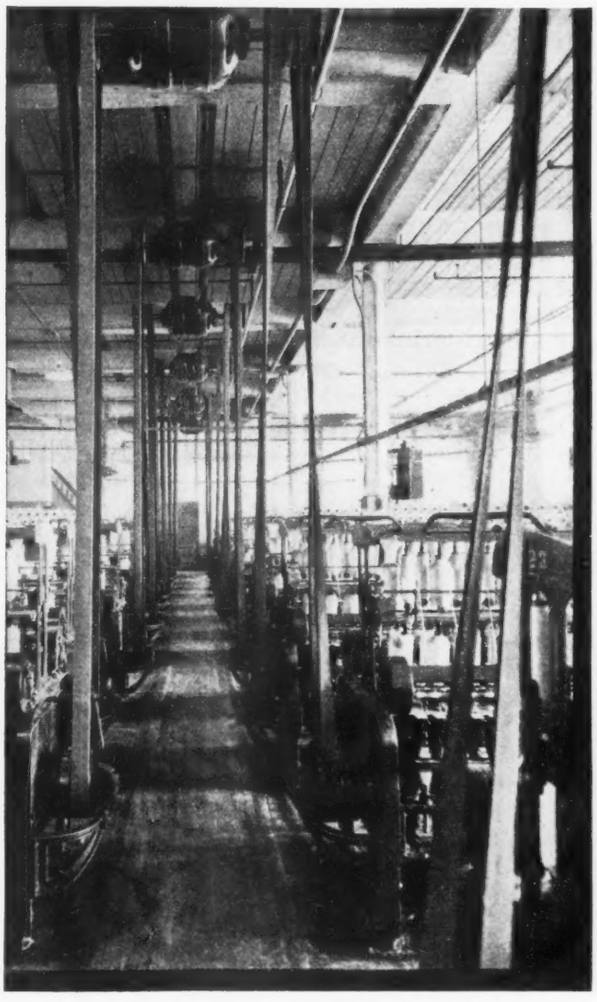
Another executive change takes a well-known man out of New England. Dexter Stevens, president of Manville-Jenckes, Inc., of Pawtucket, R. I., recently resigned to become assistant to the president of the Utica and Mohawk Cotton Mills, of Utica, N. Y. He was with the Manville-Jenckes corporation for three years or so, previous to which he was for 15 years with the Esmond Mills, of Esmond, R. I. He was once connected with the Park Hill Manufacturing Company of Fitchburg, Mass., the Lancaster Mills of Clinton, Mass., and the Necronsett Mills of Cumberland, N. C.

In the line of creative work, the Nashua Manufacturing Company of Nashua, N. H., largest producer of blankets in the world, has developed and will patent a combination of silk and wool of entirely new construction. The blankets will have an all-silk warp and an all-wool filling. The line is to be offered as a line containing the warmth of an all-wool blanket, but of less weight.

Manufacturers of textiles, large and small, are not overlooking anything which offers the possibility of profit these days. The great Amoskeag Manufacturing Company of Manchester, N. H., is not above capitalizing such retail business as may come to it from the locality of its large plant, in contrast with its policy of the past. The company recently has improved its local salesrooms and has set up large displays of its manifold products.

It has developed that the deal for the sale of the Holmes Mill, of New Bedford, Mass., to Charles E. Brady, formerly treasurer of the Potomska Mills, fell through. Mr. Brady has become affiliated with Butler, Prentice & Company of New York. Ralph C. Perkins is the new treasurer of the Kilburn Mills of New Bedford, succeeding Arthur C. Homer, who declined re-election.

A GREAT COTTON USER KNOWS COTTON MILL NEEDS



Goodyear is one of the world's largest users of cotton, building tremendous quantities of the snowy staple into Goodyear Tires, Mechanical Rubber Goods, and other products.

Goodyear, out of its own experience as a cotton mill operator and cotton user, has learned important things about textile mill needs.

As a consequence, Goodyear Belting, Hose and other Mechanical Rubber Goods for textile mill service are specially designed, constructed, and applied with an intimate knowledge of textile mill service.

For example in COMPASS (Cord) Endless construction and in THOR, seamless construction, Goodyear provides belting ideally suited to textile service—minimum stretch, maximum power, protected edges.

Goodyear Belts of special construction for cards, frames, slubbers, spoolers, looms, slashers and breakers, pickers, tappers, twisters and other textile mill drives are specified to their duty by the G.T.M.—Goodyear Technical Man.

A talk with the G.T.M. may save you money in your operations. Write to Goodyear, Akron, Ohio, or Los Angeles, Calif., and ask him to call.

TUNE IN:

Goodyear invites you to hear John Philip Sousa and his Band...Arthur Pryor and his Band...Revellers Quartet and Goodyear Concert-Dance Orchestra...every Wednesday and Saturday night, over N.B.C. Red Network, WEAF and Associated Stations

THE GREATEST NAME IN RUBBER

GOODYEAR

TEXTILE BELTING

THE careful observer of passenger traffic from the South to New York, a survey of the registers in the New York hotels, and a trip through the textile commission house area of New York, reveal the fact that the average southern manufacturer is interesting himself more and more in the marketing of his goods; not only are the mill president and treasurer making these trips, but in many cases, they are carrying with them their superintendents. They are conferring with their selling agencies and forming personal contacts with the consumers of their products.

The Manufacturer Manifests New Interest in Marketing.

This attitude is indeed wholesome because it gives to buyer and seller that common understanding so needful to successful business. It breaks down many of the misunderstandings and forms a confidential basis upon which business during the next decade must travel more than at any period in textile history.

Only recently an incident was related of how a southern manufacturer was receiving complaints of selvage trouble from one of the consumers of his product. The superintendent of the mill visited the plant in which this trouble was occurring and quickly ascertained the trouble; not only this and how it could be remedied, but without any extra expense the product could be improved. This visit to the consumer was followed by a visit to the mill by a representative of the consumer, the result being a splendid cordiality of business relationship.

It is true that quality and price are great factors in business relationships. It is nevertheless true that the personalities of the bargainers figure powerfully in its permanency. The textile mills are to be congratulated upon this new interest that they have manifested. The results portended are so evident that great good is sure to be accomplished.

"PROBLEMS of the Cotton Manufacturer in South Carolina" by William P. Jacobs, has just come from the press and is well worth the study of every thinking man, not only in South Carolina, but throughout the South. It is a comprehensive, factual study, dealing with the machinery equipment, the materials, labor and wages, marketing, the village and the attitude and relationship of the Government affecting the industry.

A Book to Read.

The huge responsibility of the textile manufacturer is indicated in the following paragraph of the introduction:

"In addition to the problem of world competition, and the problem of profitable marketing, the cotton manufacturer today must be responsible for an adequate wage for his employees; must maintain the high standards of living to which the employees have become accustomed; must equip the mill with modern machinery, often replacing equipment that would in the years past have been considered excellent. He must institute new methods of production, with the view to obtaining the greatest possible degree of efficiency, and eliminating all waste of time and materials. He must combat an ever-increasing cost of equipment, transportation, taxes and general expense. He must buy and sell wisely and at the right time. He must stand the great expense of distribution. He must fight obsolescence and overhead. He must bear the brunt of much antagonism from a legislative angle. He must care for the health of his employees, safeguard their happiness, their education and their physical and moral needs; supplying frequently many of those municipal services which, at other times and elsewhere now, have been and are being supplied by the public. He must pay more than his share of governmental costs. He must largely maintain the roads, the streets, the clinics, the hospitals, the schools, the churches. He must be the leading promoter and enthusiastic financial supporter of all public effort in his community. And in the face of all of these problems he must remember the fact that he is employed by the stockholders of the mill to insure them fair returns on their investment."

The book is adequately illustrated with photographs of mill and mill village scenes.

MAY 16th to 21st has been set aside by the cotton-textile industry to be observed as National Cotton Week. The success of this undertaking last year was so marked that it attracted international attention, not only among the producers and distributors of cotton goods, but among those of other textiles. With reports coming from abroad indicating that cottons are receiving a most favorable mention in all of the style marts of Europe and that the couturiers feel that this textile is particularly fitting in the economy program now in vogue. Especially is this fact emphasized since design and weave have raised the fabric out of the drabness which it so long possessed into that of distinctiveness and feminine appeal.

Second National Cotton Week.

(The American Cotton Manufacturers Association will meet in Atlanta, May 20-21, the last two days of the week.)

Toward the close of last season there arose a marked demand for cottons for men's suits. This demand was so great that it could not be met, but the manufacturers of cottons for men's clothing, together with the manufacturers of men's clothing, have been industriously working upon fabrics and designs which have been so perfected that indications are that the coming season will have an unusual demand for men's cotton clothes.

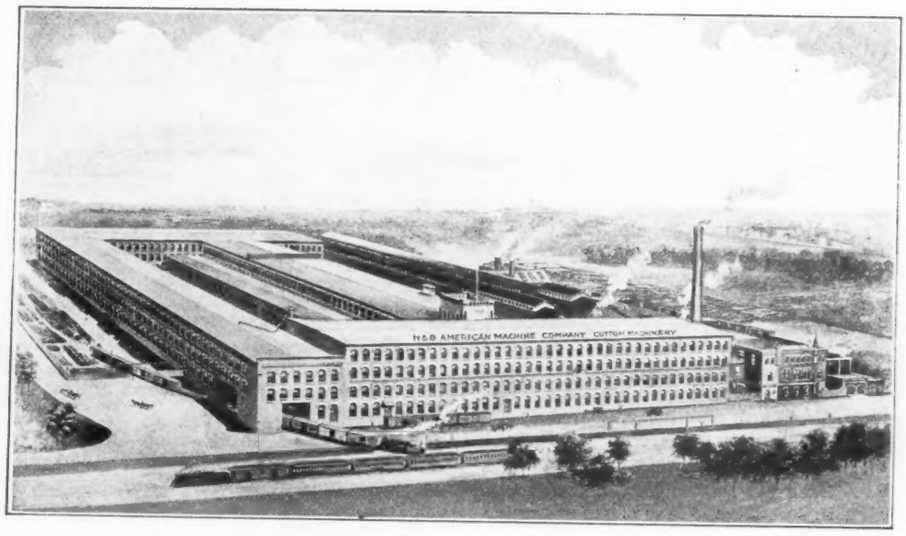
The improved methods in manufacturing both the cloth and the garment are so marked that every one feels that men will wear cotton with more satisfaction and more liberality than any season that has passed.

It may be interesting to know that approximately 40 per cent of the cotton consumed in America goes into wearing apparel, 40 per cent into industrial uses and 20 per cent into household uses.

With an increased demand in wearing apparel and with the homes of the nation increasing their household uses and with the hopes that industrial uses will be increased, the consumption of cotton for the coming year should present a very encouraging prospect.

H & B AMERICAN MACHINE CO.

PAWTUCKET RHODE ISLAND



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COTTON PREPARATORY & SPINNING MACHINERY

INCLUDING

A-1-ONE PROCESS PICKING

REVOLVING FLAT CARDS

NEW MODEL MECHANICAL STOP-MOTION DRAWING FRAMES

SLUBBING-INTERMEDIATE-ROVING FRAMES

NEW MODEL HIGH-DRAFT SPINNING FRAMES

MEDIUM AND HEAVY PATTERN TWISTERS

——ATLANTA OFFICE——

815 THE CITIZENS & SOUTHERN NAT'L B'K BL'D'G.

Comment on the Cotton Market

New Orleans, La., February 15, 1932.

COTTON PRICES changed but little from day to day or from week to week during the past month until stimulated by the credit expansion program of Washington and cables telling of an agreement between England and France over terms for a moratorium to Germany.

These two developments brought a wave of buying into cotton and all other markets and prices advanced to the highest levels witnessed since the bulge which followed the organization of the $2,000,000,000 Reconstruction Finance Corporation around the middle of January. On this advance March cotton sold up to 6.79 compared with a recent low of 6.52, while October went to 7.31 compared with 7.02 early in February.

Prior to this advance the market had been disturbed by declines in other commodities to new low levels; decision of Texas courts holding the acreage reduction passed by the legislature of that state unconstitutional; delay in ratifying the "Standstill Credit" agreement with Germany by French banks; rumore that the British Government might find it necessary to come to the credit of several private London banking houses who have considerable of their funds tied up in credits to Germany, and reports that Japanese houses had withdrawn partly or entirely from the spot market. These developments gave the market a sagging tendency during the first part of the month.

The currency expansion program and enlargement of the rediscount privileges of the Federal Reserve Banks, which was sprung on the country without warning, brought a huge amount of covering into all markets, especially in stocks, and a general upward movement in values with securities registering the greatest gains.

This development was followed closely by official announcements from London and Paris that the British and French governments had adjusted their most serious differences over the German moratorium and that an international conference will be held at Lausanne in June at which German reparations and other disturbing international questions are expected to be settled.

Prior to these two encouraging developments the railroads had succeeded in effecting a settlement with their employees calling for a reduction in wages of ten per cent for one year. This settlement together with recent rate advances is expected to place the railroads in a position to expend large amounts of money for supplies of all kinds which will be used in rehabilitating their properties. This means increased employment for many lines of industries as well as enlargement of the railroad payrolls.

The enlargement of the rediscount privileges of the Federal Reserve Banks, and release of $750,000,000 of Treasury gold for currency expansion, however, should prove the most effective step yet taken in this country to improve credit conditions because it will enable member banks to rediscount all sound banking assets. Cotton, and other commodities, should benefit greatly through these new privileges because for one thing, it means the lifting of restrictions against the rediscounting of commodity paper. Existing restrictions of the Reserve Board covering the rediscount of commodity paper and bills of exchange drawn for exports of cotton and other commodities have interfered with the normal movement of these commodities, especially to Europe. Lifting of these restrictions should prove of great benefit to cotton by increasing exports to Europe and furnishing needed facilities to southern mills to buy and hold large quantities of cheap cotton.

There has been a marked change in public psychology as a result of these developments, most of which occurred during the second week of February, and a growing feeling that they will eventually start all lines of business on the upgrade. There has also been much talk to the effect that the workings of the reconstruction corporation, in conjunction with currency expansion and enlarged credit facilities provided for in the amendment to the Reserve Banking Act, will bring on a period of inflation. The best banking opinion, however, is that while some inflation may ultimately occur, the first effect of these measures will be to relieve existing tight credit conditions and enable those who need money for business expansion to obtain it. There is, however, no question but what the effect of these two measures will restore public confidence and should enable the country to work out of its present depressed condition.

The statistical position of cotton has undergone a radical change during the current month due to steadily decreasing estimates of foreign production and increasing use of American cotton. Private estimates indicate that foreign production for the current season will be the smallest in ten years while there is promise that American cotton will displace foreign growths in all countries which favored foreign cotton at the expense of our cotton during the past two years.

The New York Cotton Exchange Service recently estimated production of cotton in foreign countries this season at 9,346,000 bales of 478 pounds. This is 1,664,000 less than its previous forecast of 1,876,000 under last year's record of 11,222,000.

According to this service the supply of foreign growths is materially less than during the previous season. Its figures on the supply of foreign cotton in bales of 478 pounds is as follows:

SEASON'S SUPPLY OF FOREIGN COTTON

Season—	1931-32	1930-31
Carry-over from previous season	5,029,000	4,926,000
Estimated production this season	9,346,000	11,222,000
Total	14,375,000	16,148,000

The entire excess supply this year consists of American cotton which, with the carry-over from the previous season, is estimated at 25,826,000 bales, if the ginnings do not exceed 16,500,000.

Consumption of all kinds of cotton for the first six months of the season was 536,000 bales larger than for the corresponding period for the previous season, according to figures compiled by the New York Cotton Exchange Service. Consumption of foreign growths shows a loss of 62,000 bales for the period while consumption of American cotton increased 598,000. The figures of this exchange in bales of 478 pounds for foreign cotton and running bales for American are as follows:

WORLD CONSUMPTION ALL KINDS OF COTTON FOR SIX MONTHS ENDING JAN. 31

Season—	1931-32	1930-31	1929-30
American Cotton	5,975,000	5,377,000	7,050,000
Foreign Cotton	5,500,000	5,562,000	5,934,000
Total	11,475,000	10,939,000	12,984,000

Exports of our cotton, which at one time were 650,000 bales behind last year, are now 725,000 ahead of last season with the bulk still going to Japan and China. Exports to Great Britain are, however, increasing, while weekly forwardings of American cotton to British mills are often nearly double what they were during the previous season. Shipments to Italy are also well ahead of last year. India has taken 91,711 bales so far compared with 36,860 last year and a ship is under charter to carry an entire cargo of cotton to that country before the end of the month.

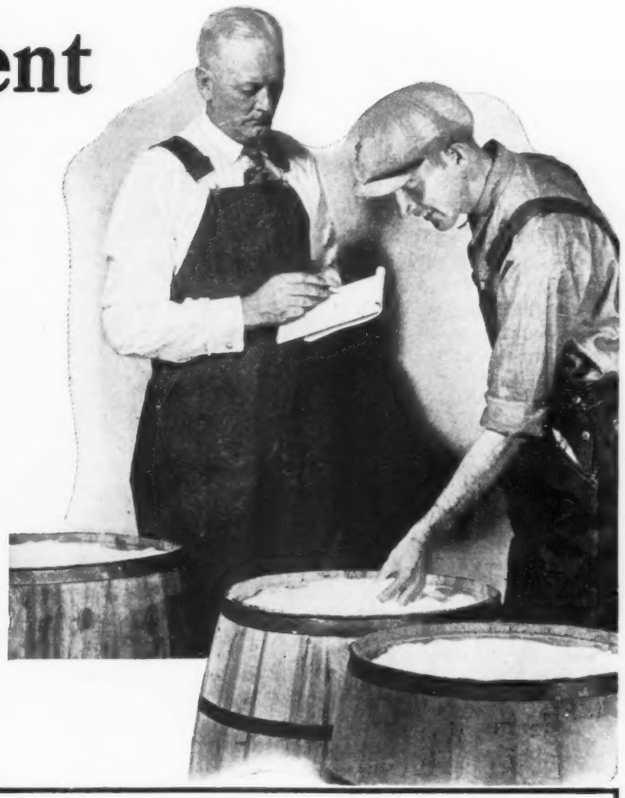
Exports to the principal countries up to February 12th with last year's figures for comparison, are as follows:

DISTRIBUTION OF EXPORTS FROM AUGUST 1ST TO FEBRUARY 12TH

	This year	Last Year
Great Britain	766,805	844,639
France	240,274	756,009
Germany	1,015,148	1,205,576
Italy	422,494	338,335
Japan	1,460,560	684,333
China	845,599	250,982
India	91,711	36,860
Other countries	619,721	620,979
Total	5,462,312	4,737,713

Spinners' takings present an interesting comparison with American mills taking about as much as during the previous season, while foreign mills show a material increase. The gain in takings by foreign mills, however, is entirely in the Orient where shipments are classed as takings once

This process will cut your degumming agent costs to half!



Save up to 50% by using these pure, scientifically prepared olive oil soaps

A NEW procedure has been developed . . . a discovery that is worth real money to you. In these times, when you especially need ways and means of reducing operating expenses, it will pay you to see how this substantial saving applies to your own plant.

Now—by using these quality olive soaps in a single bath for "boil-off and dye"—you can save up to 50% of the cost of your "degumming and dyeing" agents. At the same time you run no risk of lowering the quality of your finished goods.

Our experiments—and the actual use of these olive oil soaps in numerous plants—has proved these remarkable savings to be a fact. A careful investigation of the methods and materials used for degumming as well as a thorough study of the principles involved in "boiling off and dyeing" in a single bath made them possible.

No matter what your requirements, there is a method for using Texolive Kwiksolv or Arctic Olive Oil Soap to meet your exact needs. The incorporation of common dye-house chemicals with either of these soaps enables you to handle your "degumming and dyeing" problems at a considerable saving.

Give these quality olive oil soaps an opportunity to prove their merit in your own plant. Write today for prices and for a trial run and mail the coupon for our bulletin which gives complete details of "degumming and dyeing" in a single bath with these soaps.

COLGATE-PALMOLIVE-PEET COMPANY

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TEXOLIVE KWIKSOLV

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Texolive Kwiksolv is an olive oil soap in spongy form. This product is without a peer and is a most unique form of powdered olive oil soap. Its solubility and direct action will surprise you. (Contains 92% real soap.)

ARCTIC OLIVE OIL SOAP

(Bar, Bulk, Chip)

This item is produced from 100% olive oil foots to yield a mild, neutral soap. It rinses freely because of its low titre fat stock. It can be used in any operation where neutral olive oil soap is required. Arctic Olive Oil Soap is especially valuable in processing silks, woolens, rayons and other fabrics of a similar nature.

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This is identical to Arctic Olive Oil Soap, except that it contains a small percentage of coconut oil, the coconut oil being added to produce additional sudsing qualities . . . Also

Arctic Crystal Flakes and Granulated

Pure tallow soap, 42° titre.

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Gentlemen: Please send me copy of your free bulletin which gives complete details of degumming and dyeing in a single bath with your soaps.

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they have been cleared. H. G. Hester's statement of spinners' takings to February 12th, is as follows:

SPINNERS' TAKINGS FOR SEASON WITH COMPARISON

	This year	Last year
Southern Mills	2,967,000	2,841,000
Northern Mills	895,000	959,000
Foreign Mills	5,089,000	3,575,000
Total	8,951,000	7,375,000

Exports and spinners takings tend to confirm the recent prediction of Volkart Brothers, international cotton house, to the effect that the spinners of the world will take about 2,000,000 bales of our cotton this season in substitution for foreign growths and that consumption of American cotton will reach 13,500,000 bales minimum, with possible increase to 14,000,000, compared with 11,100,000 the previous season.

Expectation up to now has been for an increase in consumption of about 1,000,000 bales or to around 12,100,000 for the season and for a carry-over of approximately 13,500,000 bales.

If, however, consumption of our cotton should reach the minimum estimate of this firm, 13,500,000 bales, the carry-over at the end of the season will be approximately 12,100,000 bales or nearly 1,500,000 less than has been expected, if the final ginnings do not exceed 16,500,000 as predicted by the Department of Agriculture. Even should our cotton displace foreign growths to the extent predicted by Volkart Brothers, there is no reason to look for an abnormal carry-over of foreign cotton because of the shortage in the crops in India, China and Egypt and high rate at which India is consuming her own crop. If consumption of foreign growths should drop back to normal, the surplus at the end of the season should be about the average.

The movement of the crop to market, into-sight, has increased materially of late and is now 13,006,622 compared with 12,293,000 a year ago. The movement, however, is about on a par with that of 1926-27 when supplies were about the same.

January consumption figures from the Census Bureau were disappointing even though they showed a substantial gain over December because they fell under last year's record. The gain for six months was therefore smaller than hoped for. The report in detail is given below.

CENSUS COTTON CONSUMPTION FOR JANUARY

	This year	Last year
LINT—		
Consumed January	435,337	450,117
Consumed 6 months	2,631,272	2,460,250
Mill stocks	1,631,272	1,617,840
Warehouse stocks	10,032,322	7,938,817
Active spindles	25,013,750	25,628,284
Exports January	919,338	532,821
Exports 6 months	4,954,472	4,479,357
LINTERS—		
Consumed January	50,241	50,688
Consumed 6 months	333,257	335,961
Mill stocks	262,226	266,791
Warehouse stocks	51,404	86,333
Exports 6 months	57,102	63,998

On the other hand, the figures of the Association of Cotton Textile Merchants made a good showing as to production, sales, stocks and unfilled orders. Its statement for January is as follows:

ASSOCIATION OF COTTON TEXTILE MERCHANTS REPORT FOR JANUARY, IN YARDS

	January 4 weeks 1932	December 5 weeks 1931	January 4 weeks 1931
Production	232,707,000	254,692,000	202,149,000
Sales	338,010,000	204,916,000	239,106,000
Shipments	268,899,000	237,834,000	210,597,000
Stocks	254,056,000	290,248,000	355,514,000
Unfilled orders	391,150,000	322,039,000	317,465,000
Jan. sales of production	145.2%	80.4%	118.5%
Jan. shipments of production	115.5%	93.4%	104.3%
Stocks end of Jan. Dec.	12.5%	Inc. 6.2%	Dec. 2.3%
Unfilled orders Inc.	21.5%	Dec. 9.3%	Inc. 9.9%

British exports for January also made a good showing with 16,000,000 pounds of yarn exported compared with 11,000,000 a year ago. Exports of cloth totalled 180,000,000 square yards versus 116,000,000 last year.

Spot demand has been less active of late and sales at southern markets have fallen off considerably. Much of the decrease is attributed to reduced demand from Japan and China, who have been among the largest buyers up to now. Sales up to January 13th at southern markets, however, total 6,019,340 bales compared with 4,613,998 last year and 5,332,996 two years ago. The basis has remained firm and high and offerings from the interior continue light.

The principal problem ahead of the market is the extent to which farmers will reduce their acreage this year. Reports as to their intention to plant are, as usual, conflicting and uncertain. It is certain, however, that any reduction will be voluntary now that efforts to enforce a decrease by legislation were ended when the courts of Texas held the reduction law of that state unconstitutional.

Planting has already begun in a small way in the Rio Grande section and is expected to increase steadily in that area from now on if the weather in the southwest continues favorable. Very little preparation for planting has been made in other sections owing to unfavorable weather and uncertainty over finances.

What the Southern Mills are Doing

THE LILEDOUN MILLS, at Taylorsville, N. C., which were recently purchased by R. S. Ferguson, to be put into operation, have let contract to the Walker Engineering Co., of Gastonia, to overhaul and repair their machinery.

Peerless Woolen Mills, Rossville, Ga., will erect a $100,000 addition to their plant, which will include a large warehouse, and processing facilities. The building will be three stories, 100 x 300 feet, of concrete and brick construction.

Pisgah Mills, Inc., Brevard, N. C., have resumed operations on a day and night basis.

The Priscilla plant of Textiles, Inc., Gasotnia, N. C., is adding Saco-Lowell spoolers, which are being installed by the Walker Engineering Co.

The No. 1 Mill of the Clinchfield Mfg. Co., Marion, N. C., is being electrified.

Stonecutter Mills, Spindale, N. C., are now operating about 300 of the 500 looms in the plant.

Gluck Mills, Anderson, S. C., are erecting 12 four-room and bath cottages. Construction work will be handled by the company.

North Carolina Silk Mills, Burlington, N. C., are considering increasing their output, which will involve the installation of new equipment.

Eno Cotton Mills, Hillsboro, N. C., are having their card room overhauled and some machines moved in order to add machinery including 12 combers, 2 sliver lappers, 2 ribbon lappers, which were purchased ffrom C. L. Upchurch & Son, Athens, Ga. Walker Engineering Co., Gastonia, N. C., are handling the moving and erection of the machinery.

Manetta Mills, Monroe, N. C., have purchased 8 additional cards from the Hunter Machinery Co., Charlotte, N. C.

Chiquola Mfg. Co., Honea Path, S. C., is erecting a one-story warehouse addition for cloth storage. Gallivan Building Co., Greenville, S. C., has the contract, and J. E. Sirrine & Co. are the engineers.

The new addition to the bleachery of Pacific Mills, Lyman, S. C., is completed, and equipment purchased from H. W. Butterworth & Sons Co., of Philadelphia, is being installed. Electric motors are being furnished by General Electric Co.

H. H. Havner has purchased the Liberty Cotton Mills, Malden, N. C., and has started operations at the Hightower Spinning Co.

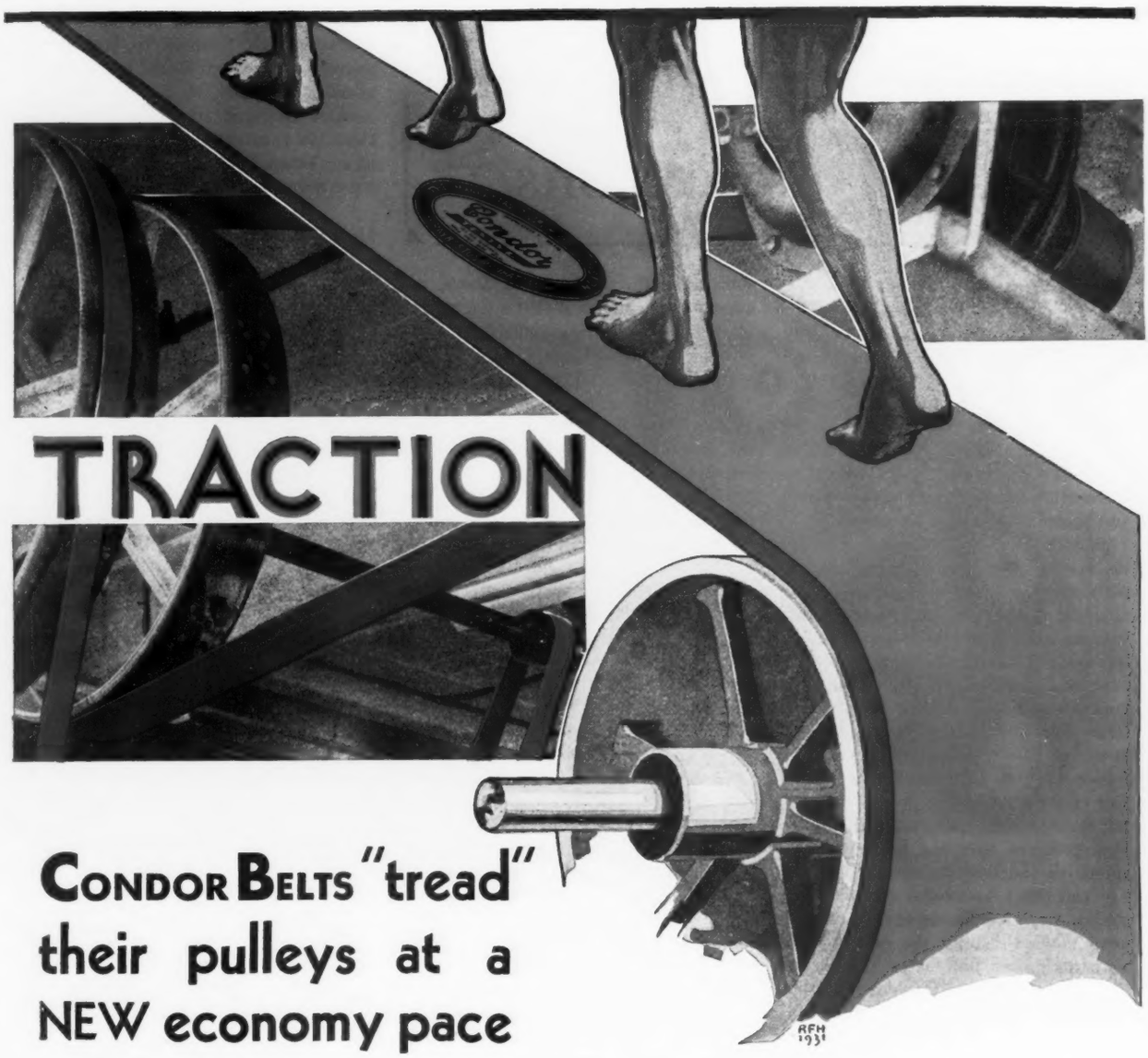
Hannah Pickett Mills, Rockingham, N. C., are installing 25 new cards.

Spofford Mills, Inc., Wilmington, N. C., have provided a life insurance policy for each employee who has been with the mills since June 30th.

Carolina Textile Corp., Dillon, S. C., are installing 32 additional cards.

At the White Oak plant, Proximity Mfg. Co., Greensboro, N. C., are constructing 8 storage warehouses with a capacity of 20,000 bales of cotton. These warehouses were designed by company engineers. Grinnell Co. of Charlotte, N. C., and Providence, R. I., were awarded the contract for sprinkler equipment.

Laurens Cotton Mills, Laurens, S. C., and the Spartan Mills, Spartanburg, S. C., have installed Veeder-Root pick counters, purchased through W. A. Kennedy Co., Charlotte, N. C.



CONDOR BELTS "tread" their pulleys at a NEW economy pace

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Condor Textyl Products are OVER 50% COTTON

—due to Condor's special rubber-bonded pure cotton duck structure, its "tread" has effective TRACTION at all speeds to 5,000 F. P. M.

—this highly efficient red-rubber friction covering is the result of 39 years' continuous mechanical rubber manufacturing experience.

—Condor's low first cost and unusual "coefficient of TRACTION" produced by its tough wear-resisting "tread" minimizes existing "costs" for power and belt maintenance.

—give Condor a trial in your mill, and know the "coefficient of TRACTION" with which so many users gain *new* economies.

Condor

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Executive Offices and Factories, Passaic, New Jersey

New Textile Equipment and Publications

Borne Scrymser Announces New Principle of Oil Spraying.

Borne, Scrymser Company, 17 Batery Place, New York City, and Charlotte, N. C., pioneers in the development of oil spraying raw cotton in process. have just announced a revolutionary change in principle in their system and equipment which will be of interest to those mills using the oil spray system and those considering its use.

As is known, this company, who are the inventors of the oiling process, experimented a number of years ago by applying the oil on the card sliver and various places back through the picking system, finally applying the lubricant in the hand fed picker hoppers. Due to the difficulty of penetrating the large mass of cotton involved here, however, the application was later moved back to the cleaning machines, and applied just after the bale of cotton was opened. This practice required high pressure spraying into such machines as the vertical opener, Centrif-Air and other horizontal cleaning machines, etc. A number of installations were made to spray the oil into the conveyor pipes just after the cotton passed through the various cleaning machines, and some considerable success was obtained, but there remained much room for improvement due to the mass of cotton resisting the forced draft and limiting the degree of distribution of the oil. Furthermore, it was recognized that in spraying prior to the pickers, the cotton containing the major portion of dirt, motes, trash, etc., tended to curtail the movement of oil taken up and distributed.

The new method announced by the company as a development of intimate study and research with the principle of oil spraying since its inception, provides for the application of the oil at the picker beater, this being accomplished by one or more sprayheads. It is explained that at this point the cotton is fairly well cleaned, and that there is no interference with cleaning or the dust chamber. The oil reaches the cotton just after the beater blades cut the cross-section of the lap. The blades, rotating at high speed, pass through the atomized fumes of the oil, it is pointed out, literally beating the lubricant into the mass of fibers, assuring a more even distribution of the oil besides permitting sufficient oil application to accomplish a desirable result, the company points out, the amount of oil permissible by spraying at this point being three to five times the amount sprayed in the hoppers of conveyor pipes.

The metering or measuring system for the oil supply consists of a double action pump attached to the knock-off motion of the finisher picker; the amount of oil is measured to each lap —or about 40 pounds of cotton—instead of to each hundred of thousand pounds as was the case under the old system. This automatic pump forces the oil to a distributing head, assuring equal pressure to one or more sprayheads as the case may be. The operation of this mechanism is synchronized with the picker so that no extra movement is required from the operator. Since the volume of oil for the cotton is relatively very small, this quantity must be measured accurately during the making of a lap, or in approximately eight minutes.

The pump is double acting, and regardless of the time factor or the weight of the lap, it is pointed out, when the knock-off motion is used the relative proportion of lubricant supplied per pound of cotton remains the same. Should the picker stop for any reason, the pumps cease to operate until the machine is started again.

The new process is about ready to be marketed, it is announced, and the company states that the equipment and system will be installed upon a loan basis, the user paying only the labor charge for installation. It is understood that additional advantages have been found in the experimental tests as regards saving of good fiber, reduction of dust and necessity of cleaning, etc.

:: :: ::

New Booklet Illustrates Textile Uses of Monel Metal.

A new booklet illustrating the various uses of Monel metal for equipment in the textile industry has just been published by the International Nickel Company, 67 Wall St., New York City. It combines the features of a catalog with a buyers' guide, and more than ten pages are devoted to listing the sources from which Monel metal equipment of all kinds can be obtained. The booklet contains 50 pages and more than 100 illustrations of various items of equipment from conveying aprons to wool scouring machines.

:: :: ::

New Belt Dressing.

The Diamond Rubber Co., Inc., Akron, Ohio, have announced the development of a new dressing for rubber belts, called "Griptite" belt dressing. The material, the company states, is non-inflammable, not greasy and is not harmful to belt or pulley.

:: :: ::

Catalog on Roller Chains and Sprockets.

Chain Belt Company, 1600 Bruce St., Milwaukee, Wisconsin, have prepared and are distributing a catalog and engineering data book, covering their new line of Rex roller chains, including prices, weights and information on the design and application of Rex roller chains, block chains, lead chains and cut tooth sprockets.

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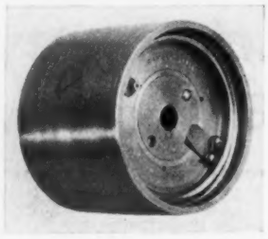
The Ramsey-Pulvis Clutch.

The Ramsey-Pulvis Clutch, handled exclusively in the United States by Ramsey Chain Company, Albany, N. Y., was designed to provide an automatic starting clutch permitting the driving motor or prime mover to come up to speed without load and also give protection against over-load shocks as well as eliminate the transmission of working strains.

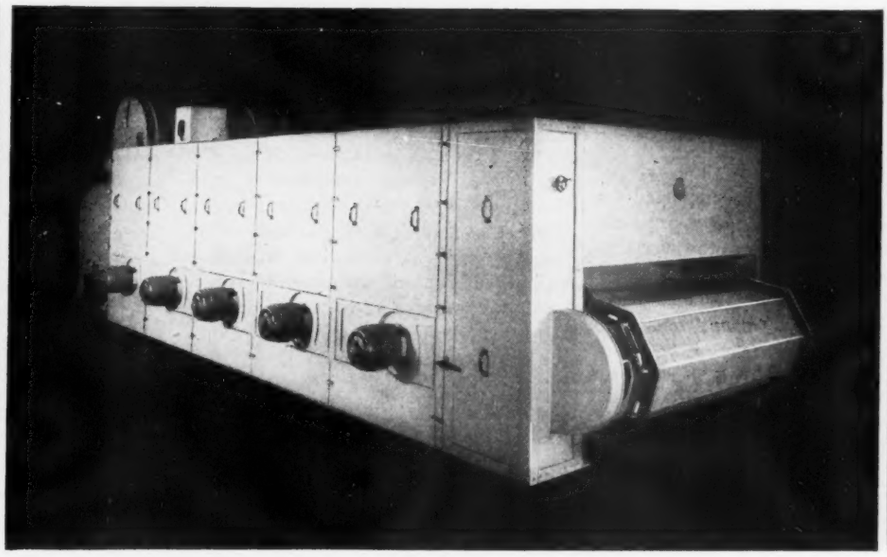


New principle clutch.

The Pulvis principle, it is pointed out, consists of the sure, gradual transmission of power by centrifugally increasing density of hardened steel shot against driving and driven elements of the clutch—the reverse of American ideas with respect to principle, design and ratings. The application of the principle, it is pointed out, are different from those to which industrial users are accustomed, inasmuch as the clutch may be made as a part of the driving member of industrial drives, such as silent or roller chain, flat belt, multiple V-belt, all gear types, or as a coupling on direct connected drives.

The company states that a new field

SARGENT *presents* *a* NEW DRYER



The NEW SARGENT SINGLE APRON DRYER

In no other dryer will you find all the advance features of this new 1932 SARGENT Single Apron Dryer.

HERE are the features. Check them with your own experience on any dryer you've ever operated. No belts or belt guards. No vibration. Individual motor driven fans and apron drive. Lower steam consumption. Lower horsepower. High production. Low maintenance. Smaller floor space. No bearings exposed to heat. A new hinged type apron conveyor, with variable speed control, designed for freer circulation of air.

. . . a quick summary but if you are watching mill costs you can see what the new Sargent Single Apron Dryer means in economy. Write for a personal consultation. No obligation on your part.

ALSO MANUFACTURERS OF: Acidifying Machines, Automatic Extractor Machines, Automatic Feeders, Back Washers, Back-Wash Dryers, Bagging Machines, Ball Winding Machines, Burr Pickers, Carbonizing Dusters, Cotton Stock Dryers, Crush Roll Machines, Dusting Machines, Mixing Pickers, Opening Machines, Special Dryers, and many others.

C. G. SARGENT'S SONS CORP.

GRANITEVILLE, MASS. FOUNDED 1852

Southern Agent: FRED H. WHITE
CHARLOTTE, N. C.

PHILA. AGENT: R. C. JEFFERSON CO.
DREXEL BUILDING

SARGENT IS THE PIONEER AMERICAN BUILDER OF DRYERS

in power transmission, by mounting the clutch on the motor or other prime mover instead of directly on the driven shaft, is opened up through the development of this principle. This new transmission unit is completely described and illustrated in Bulletin No. 132 of the Ramsey Chain Company.

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Centrifugal Pumps for Handling Hot or Cold Acid.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., are manufacturing a new pump for handling acids in process work. It is of the single suction type and all parts coming in contact with the acid pumped are made of chrome steel. To insure uniform expansion from the center of the pump when handling acids of high temperature, the company points out, the casing is supported on the horizontal center line by brackets and it is also keyed on the vertical center line underneath the water-cooled stuffing box. The pump is so constructed that the rotating element, including the self-aligning, anti-friction bearings and the Falk coupling, can be removed through the suction end of the pump without disconnecting the discharge piping or casing brackets or disturbing the motor.

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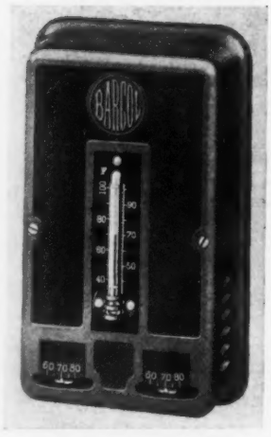
Description of New Electric Cloth Guider and Feeder.

The Textile Finishing Machinery Co., Providence, R. I., have issued a booklet describing their new electric cloth guider and feeder. Illustrations showing the guider operating with an automatic tenter, Tommy Dodd mangle, drying machine, washer or soaper, and gas singer, are shown, and a list given of other types of machines on which the guiders are applicable. A complete description of the equipment, its installation, operation, etc., is given.

:: :: ::

Duplex Thermostat Added to Electrical System of Temperature Control.

A new duplex thermostat, suitable either for general use as a two-temperature thermostat or for applications requiring control of double range circuits, has recently been announced by Barber-Colman Co., Rockford, Ill. The instrument is essentially two room-type thermostat units mounted side by side, and individually adjusted to any range between 60 and 80 degrees by means of a lever and scale at the bottom of each unit. In heating installations where a night temperature lower than that maintained during the day is desired, the duplex may be used as a two-temperature thermostat by using an external switching means for throwing the control from one units to the other. One unit is adjusted to control the normal daytime temperature, and the other is set for a relatively lower temperature, and placed in control during the night. A manual or automatic switch may be used to change the thermostat at morning and evening, placing the proper unit in control of the heating equipment. An accurately calibrated thermometer on the cover indicates the room temperature at all times.



Duplex Thermostat.

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Booklet Describes New Scouring Agent.

A new booklet, "Three New Textile Scouring Agents", has been prepared by the research staff of E. F. Houghton & Co., Philadelphia, Pa. The booklet describes the development and use of three radically new types of scouring agents which for the first time have incorporated colloidal detergents with the fats ordinarily used in making soap, the company explains. Suggestions are made for the use of these colloidal detergents, in such operations as scouring woolen and worsted yarn; fulling and scouring woolen and worsted knit goods and woven goods; boiling off silk, woven and knit goods; the two-bath process of boiling off and dyeing silk, silk hosiery, etc.; soaping of vat-dyed and vat-printed colors; and scouring and dyeing of acetate rayon. These colloidal detergents operate, it is explained, by assisting in breaking up and removing the oils usually scoured from this type of goods. After the oils are removed by the combined action of the colloidal detergent and the soap fat, they are taken up by the colloidal detergent so that they do not "kill" the soap, it is explained.

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New Mundet Catalog.

"Jointite Cork Products" is the name of a new catalog published by Mundet Cork Corp., 450 7th Ave., New York City. As stated by the manufacturers, it is "a compendium of information on the uses of cork for insulation purposes including useful data, specifications, tables and charts for refrigeration, sound-proofing, heat prevention, heat conservation, vibration deadening, and condensation prevention." It contains concise and valuable data on all of these subjects. Space is also devoted to cork, its properties and history, photographs and drawings showing specific examples of various types of construction, test curves, etc. Vibration isolation is thoroughly treated.

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Bulletin on Starting Switch.

A bulletin covering their high-tension across-the-line starting switch has been issued, as Bulletin No. 726, by Allen-Bradley Co., Milwaukee, Wisconsin. These switches are furnished in two sizes with a maximum rating for standard squirrel cage and high reactance squirrel cage motors of 750 hp., 2,500 volts.

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New A. C. Magnetic Contactors.

To meet the demand for a dependable magnetic contactor of smal almpere capacity, the Industrial Controller Division of the Square D Company, Milwaukee, Wis., announce two new sizes of Class 8511, designated as Type H and K, rating from 3 to 15 amperes for non-inductive load or the fractional horespower ratings for 110 volt, single phase motors. All desirable structural features of larger contactors are embodied in the design, it is explained, including laminated magnet frames, floating armatures to insure quiet operation, silver to silver contacts, porcelain bases, approved temperature and insulation standards, votages up to 220 volts for Type H and 440 volts for Type K. These contactors are built in a variety of combinations: single and double pole, single and double throw, circuit opening and closing, two or three wire control, and three wire thermostat control. The applications include temperature regulators, oil burners, stokers, electric ranges, clocks, signals and lighting system and small motors.

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Booklet on Whitin Combing Machinery.

A new catalog of the Whitin Machine Works, Whitinsville, Mass., covers the D-3 comber, and sliver and ribbon lap machines. It is very complete in describing these machines and their various parts, and contains calculations, draft and production tables and directions for setting and supervising this equipment.

Another recent Whitin booklet describes "Wool Spinning by the Frame Method." It gives a brief history of woolen yarn spinning, and describes the Whitin system of frame spinning.

NINETY SIX and GREENWOOD COTTON MILLS

Standardized With Sherwin-Williams Products

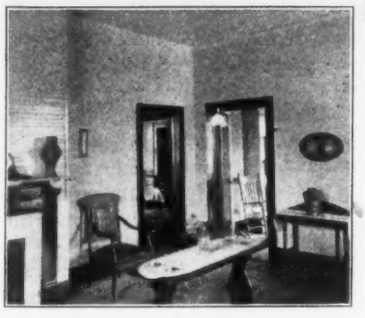
Exterior: Mill Village Paints
Interior: Velvet Enamel

HERE are views of the mill properties in both the Greenwood and Ninety Six Cotton Mills. These mills have standardized on Sherwin-Williams Mill Village Paints for outside, and Velvet Enamel for inside beautification and upkeep of workers' homes.

Repeated tests in the proving ground of actual use on mill property everywhere show these definite qualities of Mill Village Paints: (1) *Reduced Production Cost* through improved morale; (2) *Definite savings in painting costs* because fewer gallons of Mill Village Paints do the work, *last longer* under all conditions of service, and *look better.*

Many other leading textile mills throughout the country have standardized on Sherwin-Williams Products for both mill and village upkeep. *Their names will be furnished upon request.*

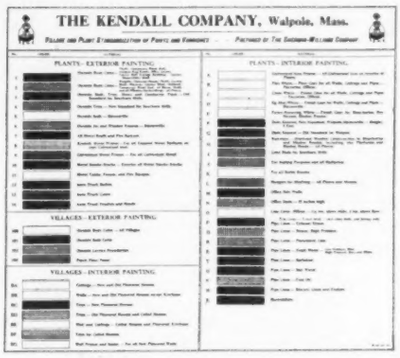
Scene from the village of the NINETY SIX Cotton Mills, at Ninety Six, S. C. S-W Mill Village Paint on the outside. S-W Velvet Enamel on the inside make these attractive homes.



Interior of one of the operative's houses, GREENWOOD Cotton Mill, Greenwood, S. C. One coat of Velvet Enamel Silver gray on side walls; 2 coats of Velvet Enamel Ivory on ceiling. S-W Varnish No. 82 on trim. S-W Mill Village Paint on exterior.

What the Sherwin-Williams STANDARDIZATION PLAN IS . . .

Briefly, it is a plan that eliminates costly guess work and haphazard procedure from the painting of mill property. The plan shows WHAT finish to use . . . . WHERE to use it . . . . HOW to use it . . . . and WHEN. Individual Standardization charts carrying the standard colors and painting schedules are worked out by S-W Paint Engineers, *for each customer* Copies of the chart are kept at all the operating units of the plant—the others in the files of the sales offices and technical department of The Sherwin-Williams Co. Each individual product has a code number, or letter, which indicates to plant executives and to Sherwin-Williams, the *purpose*, the *color* and the product for each surface and condition. This assures mill management of receiving the same uniform grade of product as was first recommended, thus making the appearance of repairing and refinishing the same as the original finish. Complete details will be gladly furnished you. Write to The Sherwin-Williams Co., Cleveland, Ohio.


THE KENDALL COMPANY, Walpole, Mass.

Specimen Standardization Chart

Trade Mark COVER THE EARTH Registered

NOTE: Textile offices at Philadelphia Charlotte, Spartanburg and Atlanta. Our warehouses at Charlotte and Spartanburg carry stock for prompt service and convenience for the textile trade.

SHERWIN-WILLIAMS
MILL VILLAGE PAINTS

NEWS ITEMS *with a Textile Slant*

Auburn to be Host to Chemists and Colorists.

The spring meeting of the southeastern section of the American Association of Textile Chemists and Colorists will be held at the School of Textile Engineering, Alabama Polytechnic Institute, Auburn, Ala., it was recently announced by Charles B. Ordway, of Auburn, who is secretary of the section.

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Clemson Textile School Offers New Course in Textile Testing.

A new course—modern methods of textile testing—is being given to a number of the leading textile seniors in the textile department at Clemson College, S. C. This course is conducted by Director H. H. Willis, who has had not only considerable practical experience but who was for some nine years in charge of different phases of cotton spinning research for the U. S. Department of Agriculture. The Clemson textile department has a modern textile testing laboratory equipped with both humidifying and dehumidifying units automatically controlled irrespective of outside temperature and humidity.

Some of the more important phases to be taken up are the value of textile testing, how to formulate test problems and an experimental procedure to solve the problem, laboratory technique, how to use laboratory devices and machines, how to interpret the data, and how to organize an orderly report of findings. This course is being offered to meet the growing deman for men trained in textile testing.

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Scope of Greenville Textile Show Broadened.

Heretofore exhibits at the Southern Textile Expositions have been confined largely to machinery, installations, accessories and supplies for cotton-textile plants, but the management has decided henceforth to include the woolen and silk industries. Invitations have been extended to the presidents, treasurers, superintendents, and department heads of all southern worsted and silk factories to visit the show, which will be held in Textile Hall, Greenville, S. C., during the week beginning October 17th.

Extensive repairs have been made to Textile Hall; one improvement is the construction of a wide vestibule with storm doors at the Washington street entrance. A temporary addition, 40x79 feet, will connect the main exposition hall with the steel annex.

More than 75 per cent of all available space has been contracted for, and reservations for the remainder are being concluded. The program includes the fall convention of the Southern Textile Association, a meeting of the Greenville section of the Textile Division of the American Society of Mechanical Engineers, and other groups. Greenville country clubs will be open to exhibitors and textile men. During the week of the exposition, the Southern Railway will operate Pullman sleeping cars from Greensboro and a like special service from Atlanta. These cars will be parked in Greenville the day of arrival, returning to point of departure late that night. Baggage may be left in the cars; thus visitors may attend the exposition without the necessity of obtaining hotel rooms.

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Second National Cotton Week to be Held During Week of May 16-21.

According to announcement by George A. Sloan, president of the Cotton-Textile Institute, Inc., the second National Cotton Week sponsored by the Institute will be conducted during the period of May 16 to 21 inclusive.

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Bemberg Transfers N. Y. and N. C. Headquarters.

American Bemberg Corp., and American Glanzstoff Corp., have transferred their New York headquarters to 261 Fifth Avenue, the southern corner of 29th St., where they occupy the 24th floor. In the interests of its southern customers, the Greensboro, N. C., office of the American Bemberg Corp., of which C. Chester Bassett, Jr., is in charge, has been transferred to 147 Brevard Court, Charlotte, N. C.

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Clemson Textile Department Adds New Equipment and Drives.

Among the equipment recently installed in the textile department at Clemson College are three circular hosiery machines, incorporating the latest developments in seamless hosiery knitting. These machines were installed by Scott & Williams, Inc., and its subsidiary, Standard-Trump Brothers. The installation includes a 300-needle Model K spiral machine, equipped for picot edge, lace top, cradle foot, and gusset toe; a 220-needle 25-step spiral HH machine fitted with attachment for clock work in three colors; and a Standard H machine for men's fancy half-hose, which combines the principles of needle reverse plaiting and two-color wrap stripe.

The school also recently installed a Rockwood base and short belt drive in its spinning department. This drive, supplied through the co-operation of E. F. Houghton & Co., permits the use of the flat belt for short drives. The motor is pivoted so that it not only drives but also serves as an idler. Hence, constant tension is maintained on the belt.

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McLeod Takes Over Knoxville Concern.

The McLeod organization, which operates mill supply houses at Greensboro, N. C., Greenville, S. C., and Atlanta, Ga., have taken over the Brown-Roberts Belting Co., 408 West Jackson Avenue, Knoxville, Tenn. Jack Harris, Jr., is manager of the company at Knoxville. He formerly was southern representative of the Hewitt Gutta Percha Co., of Buffalo, N. Y. Mill supply lines have been added to the belting of the Browning-Roberts Belting Co.

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Chamberlin Joins National Oil Products.

DALE S. CHAMBERLIN, B.Ch.E., D.I.C., has joined the research staff of National Oil Products, Harrison, N. J. Dr. Chamberlain was graduated with a B.Ch.E. degree at the University of Michigan in 1912. After a year with Corn Products Refining Co., he went to Bethlehem, Pa., as chemist for the Lehigh Coke Co., later becoming superintendent of the company's by-products division. In 1917 he became connected with the department of chemistry and chemical engineering at Lehigh University, and during 1923 and 1924, lectured at Imperial College, Science and Technology, London, England, continuing his work at Lehigh. In 1929 he continued his work as technical director for R. K. Laros Silk Co. Dr. Chamberlin is the designer, builder and operator of the plant for recovering oil from bone, and for the manufacture of bone carbon and Dippel's oil.

Dr. Chamberlin.

SORRY...but we CAN'T get that order out today!

"Trouble with drives . . . machines stopped . . . production held up . . ."

And, perhaps future orders lost. But even if not, it's still a fact that shut-downs due to faulty drives cost money . . . increase overhead . . . eat into profits.

That's why so many plants today are using Dayton Cog-Belt Drives. Dayton's exclusive and patented cog construction gives Dayton Cog-Belts greater belt flexibility. They're "built to bend" easily at high speed around small diameter pulleys. The sides are *die-cut, not molded,* another exclusive Dayton feature. That means they are *accurate.* They *stay* accurate. They fit the pulley grooves. And the exposed ends of the fabric give far greater gripping power. There's no slipping, sliding and twisting. This means *smooth starting and positive speeds* with *less tension.*

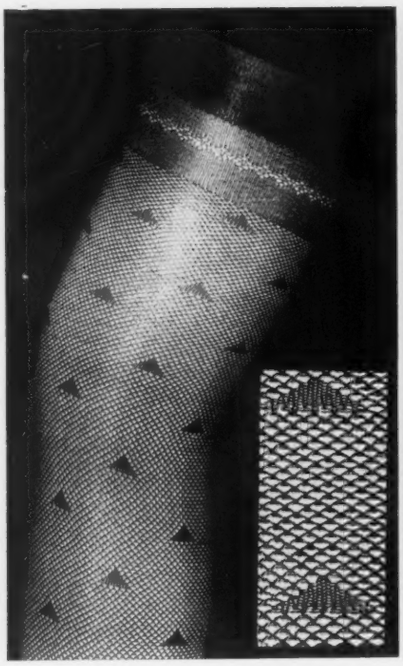
These are just a few of the reasons why Dayton Cog-Belt Drives *reduce belt replacements often more than half* . . . why they practically eliminate drive-trouble shut-downs . . . why they increase production at a lower cost. They offer you many other advantages equally important. They save floor space, save in length and number of belts required, save in belt investment and belt upkeep expense.

Let us tell you how Dayton Cog-Belt Drives would increase production and profits in *your* plant. A letter or a wire will bring you facts you'll be interested in knowing.

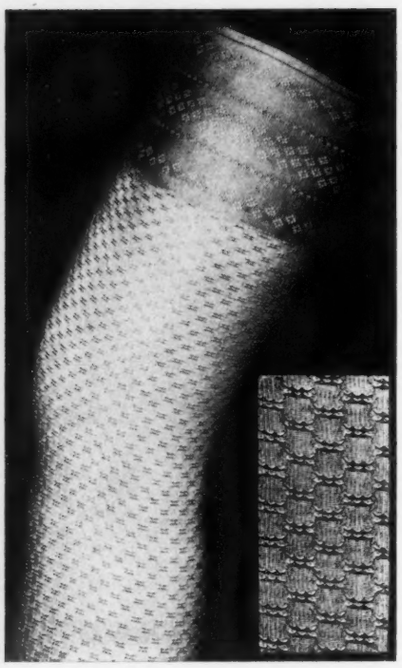
THE DAYTON RUBBER MFG. CO.
Dayton, Ohio

Factory Distributors in Principal Cities and all Westinghouse Electric and Manufacturing Co. Sales Offices

Dayton
COG-BELT DRIVES



"Points d'Esprits", adapted from an authentic lace design by Charles Chipman's Sons . . . . . .



"Devonshire", adapted from authentic Devonshire lace pattern by Charles Chipman's Sons . . .

Rare Laces Source of Hosiery Designs .

An old lace sampler which shows the authentic stitches for all of the famous lace patterns, is the source of new designs being offered by the mills represented by Charles Chipman's Sons. The sampler was photographed and copies were distributed, to be used as a working basis. The designs thus worked out are being identified by the name of the lace, for instance, Chantilly, Devonshire, Points d'Esprits.

Hanes Associated Mills have also developed a number of new patterns, ranging from the geometrical, with diamond and hexagonal units, to a more floral type, such as clover leaf. Generally speaking, the smaller, closer-spaced designs seem to meet with more favor than the larger ones. Activity in all-over lace hose continues at a high level, according to reports from both of these groups.

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Booklet on the Broad Silk Industry.

Crompton & Knowles Loom Works, Worcester, Mass., have prepared in booklet form two articles by John Richardson, of their organization, under the title "Thumbnail History of the Broad Silk Industry in the United States." This provides an interesting chronological record of the broad silk industry, by periods; first treated is the thirty-year period from 1830 to 1860, and from 1860 on the record is discussed by decades. In addition to the historical and economic record of the industry, Mr. Richardson has incorporated an interesting account of the loom history by periods, describing the developments brought out in broad silk looms during each decade up to the present.

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Changes in Personnel at Worthington Corp.

Worthington Pump & Machinery Corp., New York City, have announced several personnel changes. C. E. Wilson, for the past nine years general sales manager, is now vice president in charge of industrial relations. Clarence E. Searle, who recently resigned as general representative in charge of sales for Allis-Chalmers Mfg. Co., after 17 years service, becomes vice president in charge of sales at Worthington. Charles N. Barney, for 14 years secretary and general counsel, has been given the office of treasurer, in addition, succeeding William H. Baumes who retires after 14 years as treasurer. A. L. Prentice, formerly assistant comptroller, was appointed assistant treasurer, and Walter Lehman remains as assistant treasurer in charge of credits. Frank D. Talmage, formerly member of the counsellor's staff, is now assistant secretary of the company.

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Kirner Yarn Agency Returns to Old Quarters.

The firm of Lee Kirner, Inc., cotton yarns, has returned to its old quarters at 40 East 22nd St., New York City, from those occupied at 164 West 25th St., for the past two years. The firm of Lee Kirner, Inc., includes William F. Kirner, Alfred J. Kirner, and Lee Kirner, and has been engaged in the selling of natural and colored cotton yarns in the New York market for the past 12 years.

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New Equipment for N. C. State College.

The textile school of N. C. State College, Raleigh, N. C., has just completed the installation of a double lift, double cylinder Jacquard, donated by Thomas Halton's Sons, Philadelphia. This Jacquard is tied up for fine fabrics and will be used for dress goods designs made by the students. The school has also installed on one of the dobby looms in the weave room, a name dobby made by Crompton & Knowles Loom Works. This small dobby enables students to weave initials in the selvage of any piece of cloth, and illustrates the principle used to insert names on towels or other fabrics made on dobby looms.

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Loper Cost Organization Is Incorporated.

Ralph E. Loper recently announced that for rendering better service and in recognition of the co-operation of his associates, his cost accounting and industrial engineering firm, Ralph E. Loper Co., has been incorporated. One associate, Gilbert F. VanBlarcom, is treasurer of the Massachusetts corporation, and Walter Simister, Jr., is vice-president. Mr. Loper is president. The firm maintains offices at 500 Woodside Building, Greenville, S. C., and at 32 Buffington Bldg., Fall River, Mass.

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Rayon Specialists Organize New Consulting Firm.

Announcement has been made of the formation of Hathorne & Green, 114 East 32nd St., New York City, as consultants, specializing in rayon. The partners are Berkeley L. Hathorne and Henry Green, formerly of the Tubize-Chatillon Corp., who will continue to serve the Tubize-Chatillon organization in a consulting capacity. Both Mr. Hathorne and Mr. Green, who have been in charge of the technical service laboratory of Tubize-Chatillon for the past three years, have had wide experience in the technical branch of the rayon industry covering all divisions from the raw material to the finished garment. During the last five years, Mr. Green has specialized on rayon production problems. Prior to entering this field he was on the research staff of the New Jersey Zinc Co. for 12 years. Mr. Hathorne has had a broad textile experience and for the past five years has specialized in the dyeing and finishing of rayon.

U S BOBBIN & SHUTTLE CO.

Bobbins, Spools and Shuttles
of every type and
description, for every purpose

Manchester, N. H. Charlotte, N. C. Monticello, Ga. Providence, R. I.

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

WALTER DILLARD, JR., who recently joined the organization of the Sibley Manufacturing Co., Augusta, Ga., has subsequently been made assistant superintendent of the plant. JOHN KLINCK is superintendent. H. RAIFORD GAFFNEY recently became associated with Sibley Manufacturing Co. and Enterprise Fabric Co., as fabric man.

ARTHUR S. JARRETT has resigned his position as superintendent of Mill No. 3, Chadwick-Hoskins Co., Charlotte, N. C., to accept a similar position at the Aragon plant of Aragon-Baldwin Cotton Mills, Rock Hill, S. C.

HAROLD MAHON, formerly purchasing agent of Judson Mills, Greenville, S. C., is now representing Stein, Hall & Co., with headquarters at 221 Tindall Avenue, Greenville, S. C.

B. B. BURNETT, formerly overseer of spinning at the Whitney (S. C.) Manufacturing Co., is now overseer of spinning at the Pacolet Mfg. Co., Pacolet, S. C. He is succeeded by WALTER H. GLENN, who was formerly overseer of spinning at the Manchester (Ga.) Cotton Mills.

J. C. CHILDERS has accepted the position of designer at the Erlanger Cotton Mills Co., Erlanger, N. C. Mr. Childers is a graduate of the Clemson College textile department, class of 1931, and has had experience at the Judson Mill, Greenville, S. C., and the Gossett Mills, Anderson, S. C. R. H. HOPE, who has been designer at the Erlanger mills, was promoted to overseer of weaving. He is a Clemson graduate, class of 1926.

J. A. WHITE was recently promoted to superintendent at the Cleveland Cloth Mills, Shelby, N. C., succeeding J. B. HOTHERSOLL, resigned.

CHARLES S. GLICKSMAN has joined the staff of the Glyco Products Co., Inc., Bush Terminal, Brooklyn, N. Y. Mr. Glicksman majored in chemistry and physics at the University of North Carolina. He will devote most of his time to special emulsion work for the textile, leather, food, cosmetic, rubber and paint industries.

E. L. MCCORMACK has been made designer at the Oconee Mills Co., Westminster, S. C. He is a graduate of the textile department, Clemson College, in 1926, and has had experience in fancy fabrics at the Victor-Monaghan Mills, Greenville, S. C.; Mills Mill, Woodruff, S. C.; and Dover Mills, Shelby, N. C.

G. E. TOWNSEND recently accepted a position with the Piedmont Print Works, Greenville, S. C. He has been taking post-graduate work in the chemistry and dyeing division at Clemson College textile school.

J. C. COWAN, JR., has been made plant manager of the Rayon Fabrics Corp. and United Throwing Co., units of the Burlington Mills, at Elon College, N. C. He was formerly assistant general superintendent of the weaving plants of the organization, in Burlington.

Y. E. SMITH, superintendent of the Durham Cotton Manufacturing Co., Durham, N. C., has been made secretary and treasurer, succeeding J. HARPER ERWIN, who becomes president succeeding W. A. ERWIN, who has retired from the position.

A. A. MOORE has become secretary and treasurer of the Crescent Knitting Mills, Statesville, N. C. He was formerly superintendent of the Lillian Knitting Mills, Albemarle, N. C.

J. B. HOTHERSALL, formerly superintendent of the Cleveland Cloth Mills, Shelby, N. C., has become superintendent of the silk mill of Dilling Mills, Kings Mountain, N. C., succeeding J. I. LAURENS, resigned.

GEORGE S. HARRIS, associate of Hunter Manufacturing & Commission Co., with headquarters at 101 Marietta St., Atlanta, Ga., and president of the Lowe Mfg. Co., Huntsville, Ala., and Shelbyville (Tenn.) Mills, has been made also president of the Cascade Mills, Mooresville, N. C.

W. A. HOPE has resigned as superintendent of Mills No. 1 and No. 2 at the Republic Cotton Mills, Great Falls, N. C.

J. L. COKER, III, has been elected president of the Sonoco Products Co., Hartsville, S. C., manufacturers of paper cones, spools, parallel tubes and other textile mill specialties, succeeding his father, the late C. W. COKER. Other officers are D. R. COKER, vice-president; J. B. GILBERT, treasurer; C. K. DUNLAP, secretary; and C. H. CAMPBELL, sales manager.

G. A. JOHNSON has become overseer of carding at the Martha Mills, Thomaston, Ga. He was formerly superintendent at the Fitzgerald (Ga.) Cotton Mills.

HOWARD R. HART, formerly superintendent of the Victory Manufacturing Company, Fayetteville, N. C., has accepted a similar position at the Durham Cotton Manufacturing Company, Durham, N. C., succeeding Y. E. Smith, who has been promoted to the position of secretary and treasurer.

Obituary.

ALEX LONG, president of the Arcade Cotton Mills, Rock Hill, S. C. and chairman of the board of the Aragon-Baldwin Cotton Mills, passed away on February 16th, at a Charlotte (N. C.) hospital, following a lingering illness of pneumonia and influenza. He was 73 years of age and was one of the best known figures in southern textile circles. He was a member of the board of directors of The Cotton-Textile Institute, Inc., and a member of the executive committee of the Cotton Manufacturers Association of South Carolina. He is survived by his widow, one son, Alex Long, Jr., and a daughter, Mrs. York Wilson, of Rock Hill.

SLOAN M. ROBINSON, one of the pioneer southern cotton manufacturers, died in Lowell, N. C., on January 29th. He was president of the Atherton Mills, Charlotte, at the time of his death. In 1899, Mr. Robinson and the late JOHN C. RANKIN organized the Lowell Cotton Mills, and for years Mr. Robinson was treasurer of the Rankin-Robinson group of mills and other plants. He had retired from active service in most of his connections several years ago. He is survived by Mrs. Robinson and four children.

JOSEPH DUNSON, president of Dunson Mills, LaGrange, Ga., died suddenly on February 2nd following an attack of acute indigestion. He was 44 years of age and is survived by his widow, two sons, a brother and two sisters.

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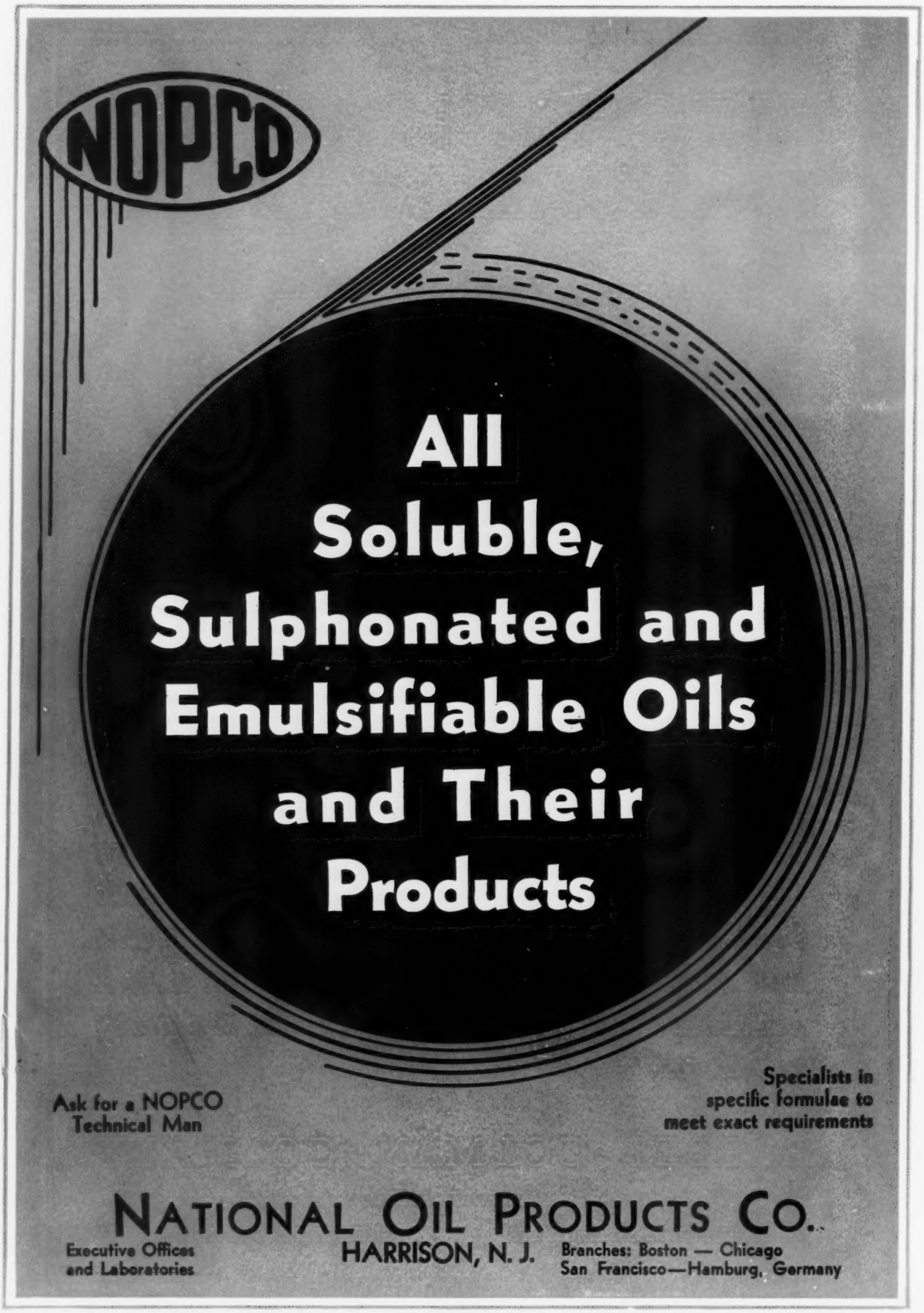
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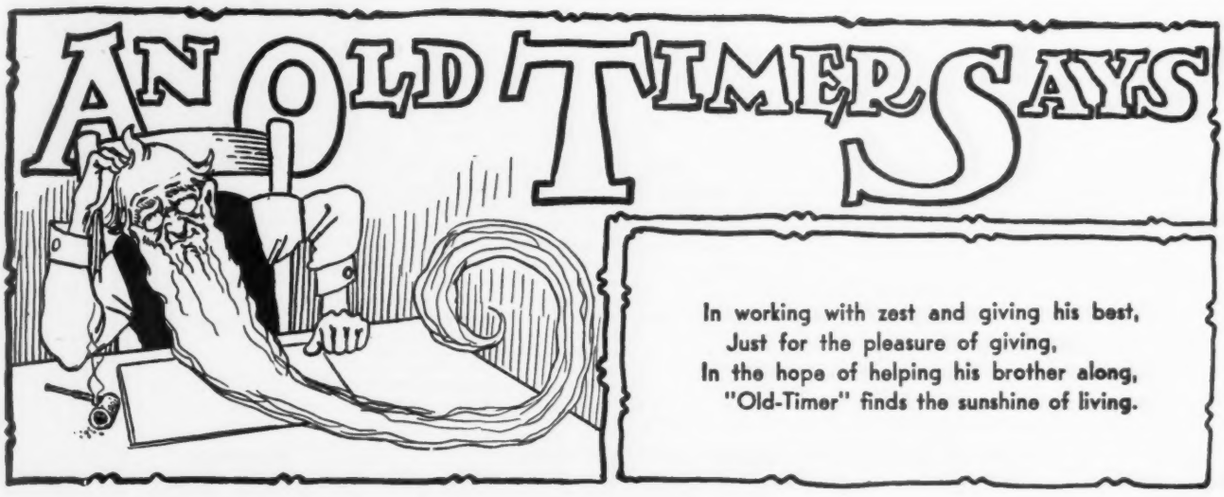
AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

The Story of Old Timer's Methods of Working and Management

Part Two—Continued from February Issue

HERE is the second installment of this series, which started last month. This time, Old-Timer describes in detail how he learned to fix looms, and how he has applied the lessons then learned to the operation of the remainder of the mill.

If you are not directly interested in weaving, the article still has a thought for you, and later installments will cover your particular department just as fully.

Again we urge that readers save their copies of these installments, in order to keep the series complete. We—and Old Timer—would be grateful to have you tell us what you think of this particular material.—The Editor.

(Note: Since this series is written in conversational style, it should be borne in mind that those paragraphs in *italics* represent Jim's part of the conversation, and those in regular type are Old-Timer's part.)

(Continued from February Issue.)

As you know, Jim, years ago it was not an easy matter for a man to induce the overseer or superintendent to let him learn to fix looms or grind cards. In fact, after I was made overseer I have had weavers to save up enough money to pay their board for a year and offer to work without pay if I would let them learn to fix. I never would do a thing like that, out I understood some overseers did. At any rate, when a man was put on to learn, he was given certain jobs to keep up, and in his spare time he was allowed to work with the section men to learn. When the mill was changing style of goods, or overhauling, or anything like that, he would usually get to help with that work.

My job was to oil the shafting once a week, haul up the cloth to the cloth room twice a day and attend to the toilets. Saturdays I had to scrub the toilets out, and the second hand found numerous other small jobs that he wanted done from time to time. Therefore, you can realize that I did not have any too much time to work with the fixers.

Finally, I was allowed to go around each morning and ask the fixers if any of them would go out and let me run the section a day. I usually got two or three days' fixing a week this way, and was now considered a spare fixer. My pay had been raised from 65 cents to 90 a day, and I was "sitting on top of the world," I thought, and looking forward to the time when some fixer would quit, or get fired, and I would get a section of my own and, in probably six months, be making $1.40 a day, which was the rate for section men at that time.

That time came, and I was given a section. Happy! JIM, I was the happiest man in the whole town. I was there waiting for the lights to go on every morning, and I was there when they went out at night. If I had a warp out when the noon whistle blew I did not go to dinner, but stayed right there to have that loom ready to run at starting time. If I did not show up at the boarding house they would send my dinner to me by James Adams, a weaver who worked on my section and lived at the same boarding house.

But confound if I could get all the flags down at one time to save my life. I had an idea that if I could work fast enough I could get ahead of my work and look up some day and not find a single flag up. Therefore, I was working like a house afire and trying my best to find ways to work faster. That was my idea of fixing.

I had been on that section about two weeks when one day I was flagged for a warp out, and when I took the warp off I saw a patch on the lay that I had not seen before. *That put me to thinking:* could it be possible that I had not been to that loom before?

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Exceptionally stable in neutral, alkaline or acid liquors of low or high concentration—even at the boil.

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It seemed to me that I had put down a million flags, more or less, and if that loom had been running all this time and I had not had a flag on it, by George, I wanted to find out why it would run that long without getting out of fix, while some of the others were out of fix all the time.

I went after Tom Smith, the second hand, and explained the thing to him. Tom belonged to the Holiness Church—claimed to be sanctified and all that; one of those fellows who would not wear a neck-tie or a gold collar button, and you can realize that he was not much of a fellow to laugh; he thought it was a sin, I suppose.

But he surely did laugh at me! In fact, he would laugh every time he saw me coming, and he would laugh if he met me on the street. He finally told me that was the way of looms. Some of them would run without giving any trouble and some of them would not. I asked him *why*, and he said, "Just because." Well, "just because," did not suit me, and I was determined to go deeper into fixing looms than that, and either learn how to fix the blamed things or call them "hainted" (haunted) and get me some other kind of job.

Looms were numbered by sets; that is, a weaver was given Set No. 18, or whatever it was, but that did not tell you how many looms the weaver had. Set No. 18 might be 12 looms or 8 looms.

I secured a piece of chalk and numbered the looms on my section from 1 to 100, by merely putting the numbers in chalk on the arch of the loom. Then every time I had a job on a loom I would make a chalk mark on the arch. Gosh! It was not long until I had some looms on which there was not any more room on the arch for chalk marks. The arch looked like a zebra. It was full of chalk marks.

And here comes Mr. Second Hand, right toward me, with a look on his face that told me before he got there that he was not coming over to raise my pay right then.

"Here! What's all this marking on the arches of these looms?"

I started in to explain as best I could.

"Never mind telling me any more of your crazy ideas about fixing looms, but if you don't get all that mess off these loom arches before the overseer sees it, you had better be sure that you know the exact location of the door."

Well, JIM, you've seen boys clean off the blackboard at school, I know, but I rubbed off more darn chalk in less time than it would have taken the whole school to clean the black boards. Goodness! I was scared.

But a few days later I thought out another system and started in to put it into execution.

Oh, yes! I failed to explain that the day after I made the chalk marks vanish like magic from the loom arches, the overseer came down one of my alleys and asked me what I wanted to number my looms for, and I thought I was sure going to catch the devil. Then I told him I wanted to find out why some looms got out of fix so many more times than other looms did.

Well, Holy Christmas! JIM, he stayed there and talked to me about an hour, went to several flags with me, took my wrenches and fixed two looms for me and when he left he put his hand on my shoulder and said, "Kid (I wasn't more than 40 years old then) you go right ahead with your ideas, and I will stand right behind you. Let those old fixers laugh all they please. Some of these days you will be showing them how to fix looms".

Oh boy! I was sitting on top of the world. The days were just simply not long enough. (I was only working 72 hours per week—mill ran 66 hours—wheel started 30 minutes before starting time and ran 30 minutes after stopping time—which made 6 hours per week—counting noon hour I was working 72 hours besides a few more hours I will explain about later).

I sneaked some red paint from the shop, made me a small brush by wrapping a piece of cloth around a stick about the size of a pencil and numbered my looms in the right way this time.

Now, here was my new plan, and it proved to be a wonderful improvement over my chalk marks.

I put a common scratch pad in my apron pocket (Fixers wore aprons because the stores were not handling overalls. In fact, I don't remember seeing any overalls in those days). Every time I had a job on a loom I made a note of it on my pad.

That night at home when I had finished my supper I would clear off the table, get out my pad and analyze my day's work.

I would pick out all the battery jobs and make special note of any looms that I had worked on twice on account of the battery.

Next, I would pick all the stop motion jobs, then the dagger (protection rod) jobs, "take-up" jobs (and believe me, the old A Model Drapers had *some* take-up to get out of fix and wear out.) Shuttle and shuttle protection or shuttle feeler jobs came next and so on throughout all the fixing jobs that came up.

In a few weeks' time my reports showed conclusively that the majority of my time was being taken up by having to work on batteries, battery protection, warp stop motions and protection rods.

The protection rod which carried the two daggers was all in one piece and oftentimes when the loom would slam (bang off) it would bend one of the daggers and then the loom would not run.

Well, here were four jobs that were causing me more work than all my other flags (jobs) put together. Of course under the heading of "Batteries" I included break-outs caused by the battery not being properly set or the shuttle protector not being set, etc.

It was simple enough to see that the thing to do was to find a way to make these four jobs *stay fixed* longer. I went after the second hand again, and after explaining to him just what I had found out and what I wanted to know he went away and brought the overseer.

The overseer was very much interested and went over the settings of all the parts with me. However, he saw that I was already setting the parts practically the way he explained they should be set, so he finally said he had been a fixer a long time, but had never had fixing looms put up to him just this way, and he thought I was on the road to find out

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THE BEDAUX PRINCIPLE DEALS WITH THE HUMAN ELEMENT ALONE

something about looms which had never been brought up before, etc., etc. Well he encouraged me a lot, but he did not show or tell me anything that would help me out on making the darn things *stay fixed* any longer.

This only made me more determined to find a way to run a section without so much duplication of work, and I kept up my record of the jobs I had each day.

When I had kept the record long enough to look back and see when I had tightened the head gear on a loom before, I soon could make out a report of all the jobs I had for loose head gears and it would tell me practically how long they would stay tight.

Of course the head gears and crank shafts, keys, etc., were not made so well as they are today and therefore were constantly coming loose, in fact, I found they did well to run 12 to 16 weeks.

We could not take out a loose head gear and take it to the machine shop to be fitted and pressed on with new keys, etc., like fixers can today.

We had to flatten the key out with a hammer, cut a piece of tin from a tomato can for a shim and fix that job ourselves, so you see it was very important not to let them wear badly.

I divided my 100 looms by 12 weeks, as the crankshaft gears would stay tight that long. Then Saturday, as soon as the wheel stopped, I would throw the belts off of eight looms and tighten the head gears carefully. This gave me opportunity to put in a shim on the key or do anything that was needed right then to prevent having a flag on that loom for head gear.

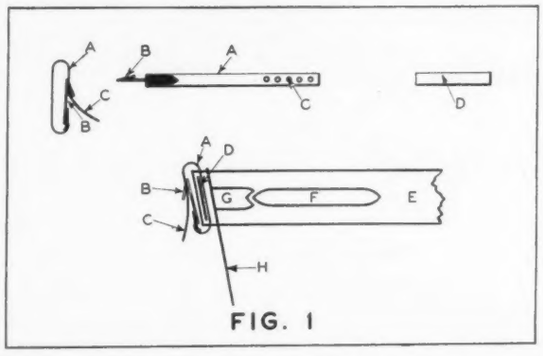


FIG. 1

Oh boy! That system worked fine. I never had another flag on those head gears because *I got to the job before the job got to me.*

As for the battery protector rod, take-ups and warp stop motion jobs, these blamed things simply would not stay fixed any length of time, so I adopted the following plan to get ahead of them.

Every time I tied a warp on a loom, just as soon as I could get it started up, I would then go over the battery carefully, see that the shuttle protection was in good shape, tighten the shuttle springs (they were very bad to come loose, as they were not constructed like shuttles today) and slip a piece of leather in the end of the lay to compensate for the wear of the picker. To explain this job to present-day fixers who can put on a new picker any time they like: we had to make the old picker run as long as there was any leather left for the shuttle to hit.

I cut the strap of leather for the battery end of lay long enough to have several holes in one end and a belt hook in the other; then I could slip a small piece of leather under the strap and thereby take up for wear of the picker. (See Sketch 1.)

Sometimes there would be two or three small pieces of leather *D* between leather strap *A* and the end of the lay. This would keep the shuttle in correct position under the battery, so the bobbin in the shuttle would be directly under the bobbin in the battery when the transferer would change the bobbins in the shuttle.

When I was compelled to put on a new picker then all the little pieces of leather *D* would be taken out as the new picker would hold the shuttle back in its proper place under the battery. Of course putting these small pieces of leather behind the leather strap *A* would cause the lug strap to have to be taken up just a trifle, in fact, just the thickness of the leather.

This was necessary on the old pick motions with small cams which necessitated running the lug strap against the picker stick to get the proper stroke.

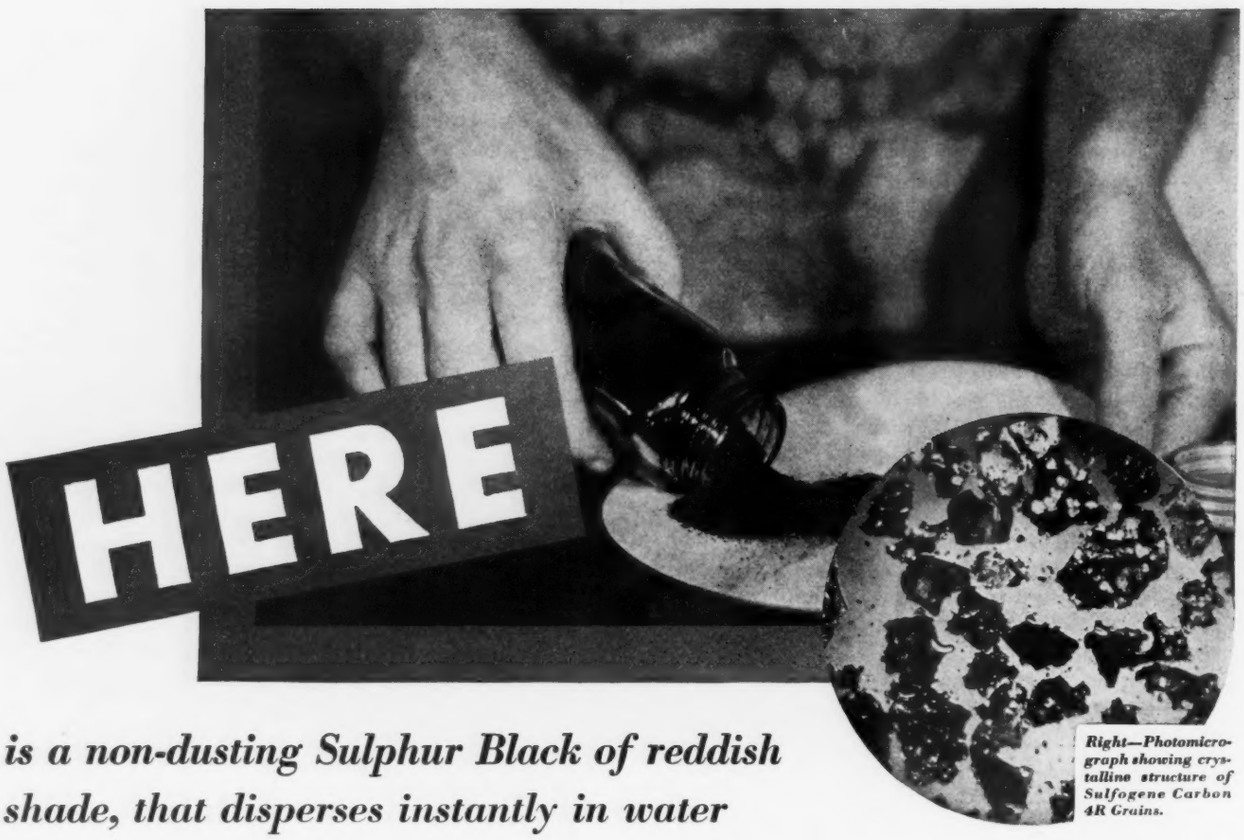
This cut out about half of my break-outs, that is, keeping the batteries and shuttle protectors in fix and by looking at all four of the jobs I have mentioned, every time I went to a loom for anything. Then one day when I looked up to see where the next flag was —a miracle had happened—

Could it possibly be so, or had I just gone blind or something? Well, anyway, there wasn't a flag up on my section, and I then realized that my work was bringing results. My system was working. I was beginning to learn how to run a section instead of letting *it run me.*

Now, since I did not have a flag up; did not have a job ahead of me of any kind; what was the next thing to do? I asked myself. I knew some weaver would raise a flag pretty soon, which weaver I didn't know, and the weavers wouldn't know if I should ask them. Therefore, I went to my work bench, which was at the end of my section, and started up the alley, doing those four jobs on each loom and at the same time doing anything else to the loom that I saw needed attention. As well as I remember, I worked over four or five looms before I had a flag up. Just as soon as I downed that flag I went right back to where I had left off and started doing the four jobs again. The time between having flags up got longer and longer, until finally I would have two and sometimes three hours to work on the four jobs before I would have a flag up.

By the time I had worked over all of my looms the second time, that is, doing those four jobs, I was having so much spare time that I turned my attention to my supply account. Of course I diligently kept up my system on the four jobs, but outside of warps out, I was having practically no flags up, and this gave me a lot of time to make strapping for my looms and keep my loom belts in good shape, thereby adding gradually to my production.

I would make the rounds to the other fixers' work benches and often find shuttles and other supplies which had been thrown away because the fixers did not have time to do a little work on them. I would



Right—Photomicrograph showing crystalline structure of Sulfogene Carbon 4R Grains.

is a non-dusting Sulphur Black of reddish shade, that disperses instantly in water

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SULFOGENE Carbon 4R Grains produce reddish shades of black while Carbon 4G Grains produce greenish shades of black. They are non-dusting, and can be handled in drug room and dye house without the danger of flying particles contaminating other materials.

Sulfogene Carbon 4R Grains contain only a minimum amount of copper and belong to our line of copper-controlled colors. They are suitable for dyeing material which is to be rubberized.

Ordinary sulphur black powders are not easily dispersable in water, having a tendency to float on the surface and are wetted out with difficulty. Sulfogene Carbon 4R Grains are *instantly* dispersable in water and very easily reduced because of this property.

Sulfogene Carbon 4R Grains are more stable than ordinary sulphur black because of their crystalline form. They can therefore be stored for longer periods without deterioration.

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take them to my work bench and fix them so they would run. In this way my supply bill began to fall, and in a few months' time I had my supply account to where other fixers just quit trying to beat my section.

This, in substance, was how I learned to fix looms. In other words, I discovered that the way to find out what was causing the work on looms was to keep a record of the jobs and this same reasoning applies to all kinds of machines as well as practically everything else we human beings have to battle with.

JIM, if you want to know what kind of shoe it pays you best to buy, then put the date in the shoes when you buy them. You will soon know just how many months that make of shoe will last you.

Oh, yea! OLD-TIMER, *I now begin to see why you had us grinders set up our cards, but not start them up, until you put the gauges on them yourself.*

Sure, JIM, that's where the idea came from. It worked so well on fixing looms that I have carried it along with me on every kind of work I have ever had. When I was made overseer I applied it to my second hands and section men and to myself. That is, we gradually built up a record of the most important items about our work and faithfully adhered to that record so that nothing could escape our attention.

For example, the insurance inspector once caught our fire buckets about half empty and reported us for it. This happened by the oiler that we had trained to fill up fire pails each Friday being out sick several weeks.

We simply entered fire pails on our record and each Friday before we would mark that item in we would look at part of the buckets to see if they had been filled.

The record was kept like a time book, about as follows: Instead of names of operators we wrote down items concerning the up-keep of looms, etc., and set aside a certain amount of time each day for this inspection work.

To show the simple method we will submit in Fig. 2 a partial list of items for a weave room.

This record shows that on 2/4, 3/10, 4/1, etc., we looked over all the shuttles in the room and had the fixers do the things to them that needed to be done, and so on with each of the other items. Most any overseer or superintendent will be surprised to find out how much one hour per day will accomplish in this kind of work and it will insure him of his work never running down.

On the list was rocker shaft bearings, and we inspected them about every two months to see that they had been properly oiled, etc. In this way nothing could get by us and the small amount of time we devoted to this inspection did not interfere with regular routine.

When a fixer was hired it was with the distinct understanding that he would stay with our head fixer half day without pay.

That head fixer had a written list of the settings of the looms and an explanation as to *why* the parts were set that way. He would explain every item to the new fixer. Then when the new fixer was put on a section he was required to set the looms as he had been shown.

To illustrate, our rule was that a lug strap must be not less than 7¾-inch from top of heel bolt to bottom edge of lug, and if a fixer could not get enough power on his loom with that setting he was to come after the head fixer, second hand or overseer, but under no conditions was the fixer allowed to lower the lug strap below that point on the picker stick.

After considerable experimenting, we had found that with the pick arm at its highest point and the lug strap set as above explained, a 40-inch E Model Draper loom had ample power. Therefore, we let the fixer have the pick arm adjustment to work with, but would not let him lower the lug strap.

We reasoned that if the loom had ample power when set up properly—then, later, if the shuttle would not drive up from loss of power, then that loss was caused by something else rather than the power on the stick, and if he was not allowed to lower the lug strap to get more power he would be compelled to find out the cause for loss of power and fix it.

SHUTTLES	2/4	3/10	4/1	5/20	6/12	
SETTING OF HARNESS		2/15		5/6		7/18
BATTERIES	1/3			4/25		8/4
WARP STOP MOTIONS			3/20			
DAGGERS DRAGGING FROGS					5/26	
TEMPLES (VIBRATING TOO MUCH—STRIKING RACE PLATE THREAD CUTTERS)			3/16		7/2	8/28

FIG. 2

This, of course, may sound rather "fishy" to some overseers and superintendents, but there are still living several men who worked in that weave room and can testify to the truth of the system and that it actually worked and the fixers liked it.

Of course we had to have a way to check up on the fixers to see that they worked on the shuttles or whatever we laid out for them, and we were very careful not to lay out too much work for the men.

JIM, the average man thinks that the least amount of work his section men have to do, the better contented they will be, but experience has taught me that that is not the case.

Wait a minute, JIM, before you interrupt me, and I will explain. Haven't you had weeks when Saturday would come before you realized it? Well, if you will stop to think, you will remember those were weeks that you were very busy all the time. That is simply human nature. If a person's mind is occupied, the time passes off quickly. You just let a bunch of section men have about half a job and you will find them loafing around the supply room or the toilets or in bunches anywhere it is convenient to congregate. Invariably there will be more discontent, more trouble between them and the operatives on their sections and they will be more grouchy than if they are kept reasonably busy.

On this theory we laid out certain work for our

(Continued on page 91.)

Two or Three Process Picking Changed to SINGLE PROCESS

A PROMINENT MILL WRITES:

"Your synchronism on evener motion and feed is working fine, and is very sensitive producing very smooth sheets of cotton for our cards."

You can have the economy and all the other advantages of Single Process Picking in your mill—using your present machines. By installing our *sensitive synchronization* of all feed rolls and hopper feeder you are assured cleaner and more uniform laps, yard by yard, with less broken fibres.

The savings in labor and power alone will pay for this equipment in less than a year.

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(440)

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

Why Insist on Yard-By-Yard Evenness in Picker Laps?

This man says it's "straining at gnats and swallowing camels." Read what he says and tell us what you think.

EDITOR COTTON:

I am inclined to think that too much emphasis has often been placed upon the importance of getting picker laps that are very even in yard-by-yard weights Certainly it is desirable to have laps that are as even in every respect as possible, but it is not necessary to demand a degree of evenness that is beyond the capacity of a picker to produce, and then worry about not having it.

A variation of half an ounce in either direction from the standard on a 14-ounce lap is only about 3½ per cent, and as the sliver made from this lap is doubled a number of times, the final error is negligible. I believe that if a lap could be so made that it would be perfectly even *inch-by-inch*, we would be getting somewhere, but I cannot see that the variations by the yard are very important, so long as they are within reasonable bounds.

The important thing is to get a *well-distributed* lap; one that would have a good inch-by-inch evenness if it were practicable to so measure laps. Holding any lap up to the light will disclose thick and thin places. An estimate of the variation in inch-by-inch weight of this lap might indicate as much as 25 per cent difference between the weight of an inch of lap that had two thick places, as against another strip that had two thin places. With normal card drafts, an inch of lap is made into about 100 inches of sliver, and a 25 per cent variation in sliver is a serious matter, where a 3½ per cent variation is of no consequence in yard-by-yard sizings of sliver.

So, it seems a case of straining at gnats to insist on a minimum variation in yard-by-yard weights when any variation in the actual practice of making laps is going to be negligible as compared with the irregularities in any small portion of lap. An evenly laid lap is highly desirable on coarse work, where there are few doublings, and if the lap is uniformly distributed throughout its whole surface, and the average weight of any given lap is correct, then the yard-by-yard errors are of little account.

Getting a well-distributed lap is a matter of well-opened stock, properly adjusted beaters and fan drafts, properly lined screens that will not leak air, and a lap of sufficient weight to screen properly. It is almost impossible to make a lap even if it is too light. It may weigh out well on a yard-by-yard comparison, but it will not be even throughout.

◆ ◆

WE invite our readers to make use of this department for the discussion of any and all problems arising in the mill or finishing plant. Questions, answers or letters need not conform to any particular style and willl be properly edited before publishing. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

The reason for this is very simple. On any given picker there is a constant area of screen exposed to the cotton, and the cotton is held against this screen by a fan draft. Assume that the area of screen is 10 square feet. Now, try to blow one ounce of cotton against this area of screen, and it will stick in small patches here and there all over the surface. Take two ounces of cotton, and the result will be the same. However, as the amount of cotton is increased, each covered portion of the screen impedes the air currents, and causes the lint to blow against the uncovered portions. It is therefore quite essential to the making of a smooth lap, to have a sufficient quantity of cotton on the screens.

A 15-ounce lap will screen more evenly than a 10-ounce lap, and a 40-ounce lap appears to be almost perfectly even. It is, of course, impractical to run a 40-ounce lap on a card, but they are run on certain arrangements of single-process picking, and are extremely even. The 40-ounce lap is drafted down on the last section of the picker to the desired weight for the card.

From the standpoint of internal uniformity of the lap, it is advisable to run as heavy a lap as it is practicable to use on the card. However, there is a limit to the weight that the card will handle satisfactorily. I have frequently heard carders say that they had improved their work by increasing the card draft, while another carder would try the same plan with no results. Quite likely, the man who improved matters, had helped himself purely on account of heavying up on the laps and getting them more uniform. The man who had no benefit from the change may have been making a heavy enough lap at first.

A combed yarn mill does not have to bother with the matter of even laps as much as the carded yarn plant, as the combing gives such an enormous number of doublings that any picker room errors are completely blotted out. However, I think the man with few doublings, who is very fussy about the yard variations in his laps, is generally looking at the wrong place for the trouble he may be having.

T. K. (GA.)

What Causes Neps in Card Sliver?

We invite you to submit your ideas as to how this man can remedy this defect.

EDITOR COTTON:

I should like to have some help through the columns of "HOW OTHER MEN MANAGE". My trouble is neps in the card sliver. My card settings are as follows: Flats, 7; stripping plate, 34; bottom plate, 22; doffer, 7; licker-in to cylinder, 7; feed plate to licker-in, 10; mote knife, top and bottom, as close as possible without hitting screen, back, 12; middle, 34; and top, ¼-inch; back plate, 22.

We run Middling cotton, 1 1/16-inch. The net weight of our laps is 42 pounds, making a 51—52-grain sliver. We strip four times in a day of 11 hours.

The cylinder speed is 160 r.p.m., doffer 11 r.p.m. We have tried 7 r.p.m. on the doffer with no noticeable difference in the sliver.

Our stock looks like it is rolled.

Our opening machinery consists of one vertical opener, one Centrif-Air cleaner, one Murray cleaner. Our picking is two-process. The breaker has a 3-blade beater and the finisher a Kirschner beater.

Any suggestions as to what might be done to eliminate the neps mentioned will be appreciated.

CONTRIBUTOR No. 6046.

Why the Cones of a Fly Frame are Concave and Convex.

This should clear up this question in good shape, but if there are any further inquiries you want to submit, let us have them.

EDITOR COTTON:

I found a question by "T. R. (N. C.)" in a past issue that seemed too interesting to let go by. He asked why the cones of a fly frame are convex and concave.

For the benefit of the readers who may not be familiar with how cone shapes or contours are computed, I am sending the accompanying tables and diagrams.

Fig. 2 shows the speeds of the various elements, also top and bottom cone diameters for different diameters of bobbin. We will endeavor to show how the cones are proportioned, so as to control the bobbin speed at any bobbin diameter, so that it will wind on the roving delivered by the front roll at the proper tension.

The front roll delivery (see Fig. 2.), is found from the train of gears and speed as shown in Fig. 1, thus $320 \times \frac{38}{38} \times \frac{78}{130} \times 1.25 \times 3.1416 = 753.98$ inches per minute. In order for the bobbin to wind on the roving delivered by the front roll and provide the proper tension, its speed must exceed the spindle speed by the proper number of revolutions to keep the ends at the correct tension. This excess speed (see column "*F*" in table of ROVING FRAME CONE DIAMETERS) is provided for through the action of the

ROVING FRAME CONE DIAMETERS

FRONT ROLL DIA	FRONT ROLL R.P.M.	DEL. IN	BOBBIN DIA	BOBBIN CIRC'M.	BOBBIN EXCESS R.P.M.	R.P.M. OF SPINDLE	R.P.M. OF BOBBIN	R.P.M. OF SLEEVE GEAR	R.P.M. OF DRIV'G SHAFT	R.P.M. OF SUN GEAR	R.P.M. OF BOTTOM CONE	R.P.M. OF TOP CONE	DIAM. OF BOTTOM CONE	DIAM. OF TOP CONE	SUM OF DIAMRS.
A	B	C	D	E	F	G	H	J	K	L	M	N	X	Y	S
1⅛	151.58	753.98	1⅛	5.1051"	147.69	651.85	799.54	392.57	320	36.29	602.41	320	3.469"	6.531"	10"
"	"	"	1⅜	5.891	128.00	"	779.85	382.91	"	31.45	522.07	"	3.780	6.210	"
"	"	"	2⅛	6.676	112.94	"	764.79	375.52	"	27.75	460.65	"	4.100	5.900	"
"	"	"	2⅜	7.461	101.08	"	752.91	369.68	"	24.84	412.34	"	4.370	5.630	"
"	"	"	2⅝	8.247	91.43	"	743.28	364.05	"	22.48	373.17	"	4.616	5.384	"
"	"	"	2⅞	9.032	83.47	"	735.35	360.04	"	20.02	332.33	"	4.805	5.095	"
"	"	"	3⅛	9.818	76.80	"	727.65	357.28	"	18.84	309.42	"	5.089	4.911	"
"	"	"	3⅜	10.603	71.11	"	722.96	354.97	"	17.48	290.07	"	5.245	4.755	"
"	"	"	3⅝	11.388	66.21	"	718.06	352.56	"	16.28	270.25	"	5.428	4.572	"
"	"	"	3⅞	12.174	61.94	"	713.79	350.47	"	15.24	252.98	"	5.646	4.354	"
"	"	"	4⅛	12.959	58.18	"	710.03	348.62	"	14.31	237.55	"	5.739	4.261	"
"	"	"	4⅜	13.745	54.86	"	706.71	346.99	"	13.49	223.93	"	5.883	4.117	"
"	"	"	4⅝	14.530	51.89	"	703.74	345.54	"	12.77	211.98	"	6.015	3.985	"
"	"	"	4⅞	15.315	49.23	"	701.18	344.28	"	12.41	201.52	"	6.136	3.864	"
"	"	"	5⅛	16.101	46.83	"	698.68	343.05	"	11.53	191.40	"	6.257	3.743	"
"	"	"	5⅜	16.886	44.65	"	696.50	341.98	"	10.99	182.43	"	6.369	3.631	"
"	"	"	5⅝	17.672	42.67	"	694.52	341.00	"	10.50	174.30	"	6.474	3.526	"
"	"	"	5⅞	18.457	40.86	"	692.70	340.12	"	10.06	167.00	"	6.569	3.431	"
"	"	"	6⅛	19.242	39.18	"	691.03	339.30	"	9.65	160.19	"	6.664	3.336	"

FIG. 2

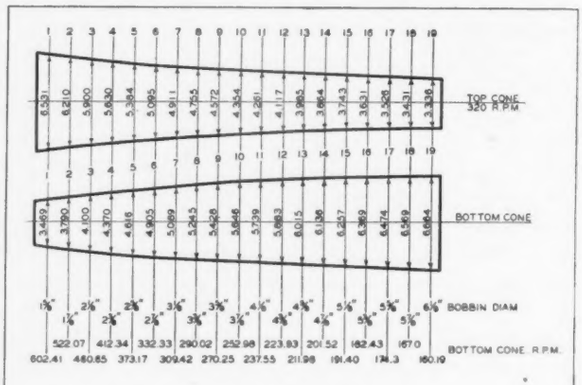


FIG. 3

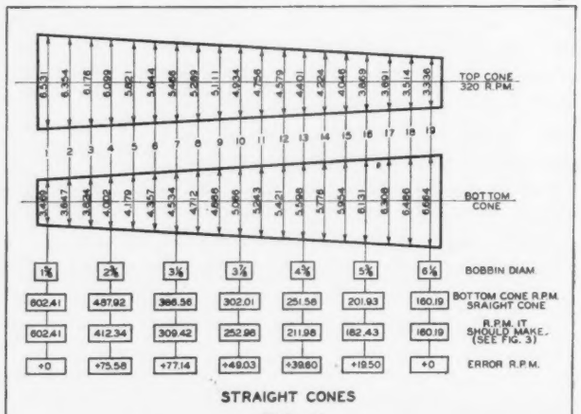


FIG. 4

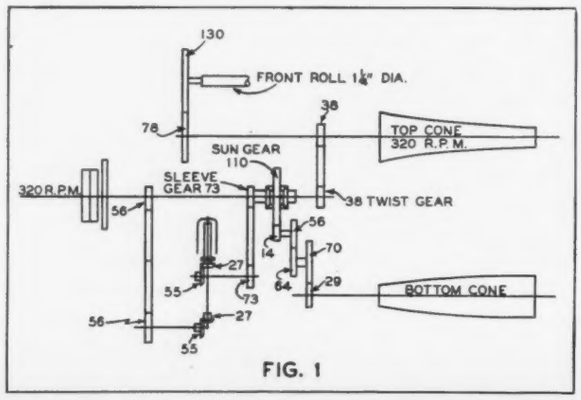


FIG. 1

cones and is found as follows:

The empty bobbin of 1⅝-inch diameter has a circumference of 5.1051-inch, and in order to take up the delivery of the front roll it must make, $\frac{753.98}{5.1051}$ = 147.69 revolutions per minute in excess of the revolutions per minute of the spindles.

The spindle speed (Column *G*, Fig. 2) is found from the train of gears shown in Fig. 1: $320 \times \frac{56}{56} \times \frac{55}{27}$ = 651.85 r.p.m., to which we add the excess speed of the bobbin to obtain the bobbin speed (*H*, Fig. 2) and we obtain, 651.85 + 147.69 = 799.54 r.p.m. as the speed of the bobbin for the first layer of roving.

From this we find that the sleeve gear *J* (Fig. 1 and Fig. 2) runs at: $799.54 \times \frac{27}{55} \times \frac{73}{73}$ = 392.57 revolutions per minute, and since the speed of the sun gear *L* (Fig. 1 and Fig. 2), is one half of the differffience between the revolutions per minute of the sleeve gear and the revolutions per minute of the driving shaft, or $\frac{(392.57-320)}{2}$ = 36.29 r.p.m. of sun gear, *L*.

The bottom cone speed can now be readily determined as follows, (Figs. 1 and 2) $36.29 \times \frac{110}{14} \times \frac{56}{64} \times \frac{70}{29}$ = 602.41 revolutions per minute.

It is desirable that the sum of the diameters of top and bottom cones should be equal at all points throughout its entire length. We shall assume the sum to be 10 inches and proceed to determine the bottom cone diameter from the following formula:

$$\frac{\text{r. p. m .of top cone} \times \text{sum of cone diameters}}{\text{r. p. m. of top cone} + \text{r. p. m. of bottom cone}} = \text{bottom cone dia.}$$

Therefore, $\frac{320 \times 10}{320 + 602.41}$ = 3.469 inches, equals bottom cone diameter.

We next find the top cone diameter by subtracting the bottom cone diameter from the sum of the cone diameters, thus, 10 — 3.469 = 6.531 inches, which means that when starting the 1⅝-inch bobbin, the bottom cone is 3.469 inches and the top cone is 6.531 inches in diameter. This procedure must be repeated for each diameter increase of the bobbin.

In Fig. 2 the speeds and cone diameters for every ¼-inch diameter increase are shown. This is sufficient to show how cone profiles are computed. The final result is shown in Fig. 3, and this shows that we have a concave top cone and a convex bottom cone.

In conclusion, I might suggest a careful examination of Column *D*, Fig. 2. Beginning with 2⅛-inch diameter, then consider the next increase in diameter, namely 2⅜-inch, which gives us a percentage increase of 11 per cent. Next, by taking the 5⅛-inch diameter and then the 5⅜-inch diameter, an increase of ¼-inch, we find that we have a percentage increase of approximately 4¾ per cent, which shows that the per cent increase of bobbin per layer is a variable which can only be compensated for through concave and convex cones.

It might not be entirely out of order to ask, why not use a pair of perfectly straight cones? To show what the resulting bottom cone speed would be, I have shown a pair of such cones (Fig. 4), using the same end diameters as in Fig. 3. I should say that it is self explanatory and does not measure up to the requirements very well.

M. E. (N. H.)

Replies to Criticism on Combing.

Looks like "M. W. H." started something. All men with combers are invited to join in this discussion.

EDITOR COTTON:

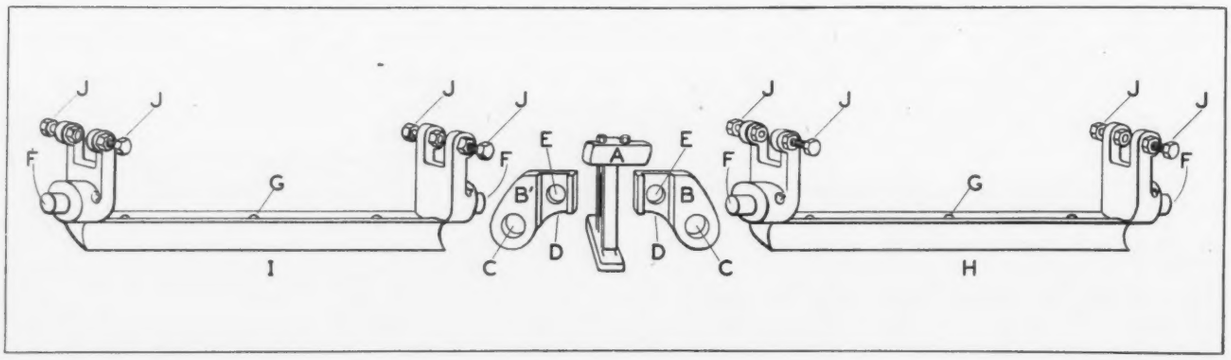
In his criticism of the combing discussion "R. G. (R. I.)" says he had begun to wonder if all comber men had packed up and gone out of business, and I certainly do not blame him as we have had very little discussion of this important subject in COTTON for many months. No doubt the condition of business has a lot to do with it, but now is a good time to be studying out ways and means of putting our machines in condition for the days to come that will not be as gloomy as the present. Combers are going to comb cotton again whether they do it with the half lap or top comb.

I am very glad to see that "R. G. (R. I.)" is interested enough to write such a good article and even though I do not agree with him wholly, still he at least is willing to give others the benefit of his ideas. Why cannot other comber men get aboard with us?

In his letter, which appeared on page 1353 of the January, 1932, issue, "R. G. (R. I.)" criticized some of the statements in my own letter which was published on page 1165 of the October, 1931, issue.

In replying to him, I want to make corrections before entering the main discussion of whether or not the half-lap combs more than the top comb, in which he disagrees with me. In his letter, "R. G." says, "I think surely he (referring to me) did not stop to think when he said that the Model D-2 comber is the only comber with the stationary cushion plate." I didn't make that definite statement. I said "*I believe* there is no other comber with this feature", meaning that this was true so far as I know, which changes the whole meaning. There may have been combers before my time with this feature, but all that I have ever had any experience with, except the Model D-2, had a movable cushion plate. The Whitin Model E-4, the Nasmith and Tunstal, all have movable cushion plates. The Whitin Model C is one I know nothing about.

In the next paragraph, "R. G." says the cushion plate has no timing. Of course not on a stationary type, but on the movable type it certainly does. I prefer the movable cushion plate type comber, because, I believe the quality of combed work is better. By



this statement I mean a stronger, rounder, more even yarn will be made. That is why I said I considered the setting at this point to be the heart of the comber. Of course the detaching roll must be in line, and the segments must be lined up and trued, and the nippers must be in line and close tight, and leather detaching rolls must be properly set. Can "R. G." go to his Model D-2 combers, and as the comber runs, hold up the web in a sliver pan before it passes through the trumpet, as high as the lap creel rods, without the web breaking? In other words, can he say that he can make a perfect piecing on this model? If he can, please get him to tell me how, as I have not been able to as yet. On the other hand, I can take you to a mill in New Bedford and show you 48 combers, and old ones at that, where you can make this very test on any sliver pan. Why not give us all the settings to comb on a Whitin Model D-2, 1¼-inch cotton, from 550-grain laps to 60-grain sliver?

We agree that the reason for building combers with stationary cushion plates was simplicity and higher speed. This is a fact, but has not quality been sacrificed to obtain this result? In other words, the comparison is similar to mule spinning as compared with ring spinning. You gain speed and simplicity, but you lose flexibility of quality, because in getting simplicity you have lost some possibilities.

The Model D-2 comber has its place and purpose, but there are those handicaps that "CONTRIBUTOR NO. 5070" brought out in his article, in September COTTON, and they have to be corrected to suit your own requirements.

I will now explain completely what I meant in my article when I said "Your cushion plates are rigid, fixed in place, therefore the machine work on the castings must be perfect or else the plates will not be in line". In the diagram, Fig. 1, *H* represents the cradle with *G* the cushion plate. The nipper knife is omitted for simplicity of drawing, but of course is hinged on arms which swing on fulcrums inside the side castings and close down onto the cushion plate *G*. At the back side of the cushion plate are three setting screws which allow the plate *G* to be pushed in or out to fit tight to the knife when it is down. In other words this whole cradle, when out of the comber entirely, must be so set that the knife and plate will bite all the way across. This cradle *H* has pins on each side shown at *F*, approximately ¾-inch in diameter and ¾-inch long, which fit into holes *C* in the casting *B*. When assembled, of course, the cradle will swing back and forth on these pins, until it is set in position with setting screws at the top of the cradle shown at *J*. These screws *J*, of course, set the angle of the nipper knife, but we will not consider them here, only for a clearer description. The casting *B* which has the hole *C*, also has a slide *D*, cut in it on the opposite side to the cradle and a bolt hole *E*. That slide *D* is milled to fit the nipper stand casting *A*, and this is the very important place where any carelessness in construction throws the settings all off later, and where I said fitting must be done if necessary. Keep this point in mind and we will see why.

At any point on the comber except each end head, the nipper stand *A* serves two adjacent heads. The casting *B* and *B*¹ are bolted together by a bolt through holes *E*. This construction leaves them free to be slid up or down vertically, by setting bolts through the top of nipper stand *A*. If the bolt *E* is loose of course they may be raised or lowered independently of each other, but they cannot move forward or backward. It is a physical impossibility, owing to those slots *D*. The nipper stand *A* slides up and down and is held by two screws up through the bottom. Let *I* represent an end cradle, and *H* the next one to it. You set the first cushion plate *I* to the steel detaching roll. You may find it necessary to slide the nipper stand *A* back in order to line this head up. When you slide the stand *A* back you carry with it the next cradle *H*, which is attached to it. Now unless all the cradles were identical, and we all know this is a mechanical impossibility, it may be that the cradle *H* needs to go even further back or perhaps even come forward, nearer to the detaching roll. So far as I have been able to find out from many experiments, and very many inquiries, no one else has ever been able to line these cushion plates up to what I call right. Now if these slots *D* are fitted to the stands *A*, properly, the difficulty can be remedied, and that is what I meant by fitting the stands. After these cradles are fitted to their stands then all cushion plates can be set to the detaching roll, and later the angle of your nipper knives can be uniform.

Now "R. G." says in his next to the last paragraph "The Model D-2 comber cushion plates can be set in line just as well as they can on the Heillman type comber." This is where I disagree with him, and would ask him where he can show any error in the foregoing explanation. In answer to the same paragraph, let me say, I do not advocate different settings on top comb shafts to make the top combs clear the nippers, but I certainly do advocate making every cushion plate set parallel to the detaching roll.

This discussion has taken enough space so I will leave the argument regarding half lap and top combs to a later number.

Come on, comber men, let's bring out all the facts that "CONTRIBUTOR No. 5070", and "R. G.", and I have tried to put the searchlight on.

M. W. H. (MASS.)

Answers Questions on Slashing.

Which is the best method of weighting slasher beams? Read what these men have to say.

EDITOR COTTON:

"How should the friction ropes on the beams in slasher stands be put in? How much weight is required on beams with 18,000 yards of 21s yarn on them?" These questions were asked by "CONTRIBUTOR No. 4797" in a past issue of COTTON.

We use a rope about ⅜-inch in diameter and long enough to reach from the size vat to the back end of the creel. We just tie the rope to the rod on which the gear that lowers and raises the immersion roll is placed. The rope is placed in the concave grooves on the beam heads, the rope going on top of the bottom beam and underneath the top beam. This is continued until the back beam is reached. A four- or five-pound weight is so hung on the rope that it will hang over the last bottom beam. Care should be taken not to allow the weight to touch the floor. If the last beam happens to be in the top stands we use a short separate rope for it on which is placed a very light weight, not over two pounds. We find that this arrangement gives us a very even tension on our beams, and that they all run out at about the same time, the back one running out first, then the next one in order, and so on until the first beam is reached. Therefore, we have very little waste.

In answer to our friend's question as to whether or not the stands should be screwed up tight as a means of applying friction, my answer is no.

The back beam in slasher creels at times has more yarn left on it when the set runs out than the other beams due to the fact that it is weighted heavier than the others. This causes the yarn to stretch more on this beam than on the other beams. I do not think it good practice to put friction only on the back beam, as stretching is generally the result.

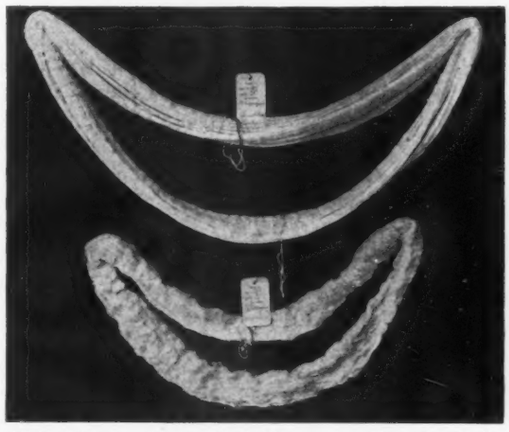
CONTRIBUTOR No. 5067.

EDITOR COTTON:

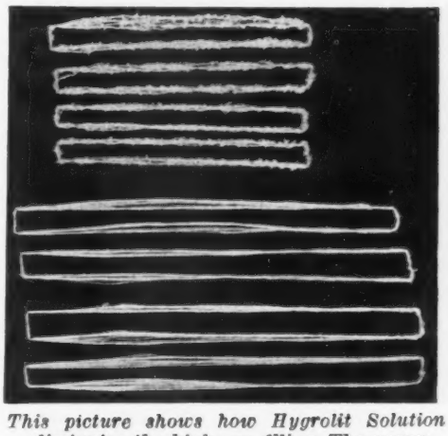
I would like to attempt to answer some of the questions asked sometime ago in your magazine concerning slashing. The first question was, "How should friction ropes be put on and how much weight is required on beams having 18,000 yards of 21s yarn?"

We run 21s yarn and I think as good method as any is to put one rope on the back beam with a three-pound weight on it, which should be enough friction to take care of the entire creel. This should also make it unnecessary to screw up on the back stands to obtain friction. I think a stand should only be screwed up enough to keep the creels in line, for I believe that all the friction should be placed on the beams by means of a friction rope. If the proper

Look into these results
in
YARN CONDITIONING



This picture shows the influence of Hygrolit Solution on 80/1 mercerized yarn. The upper hank is treated with Hygrolit and the lower one is untreated.



This picture shows how Hygrolit Solution eliminates the kinks on filling. The upper yarn is steamed and the lower is treated by Hygrolit.

These pictures show the influence of High Twist Hygrolit Liquid on cotton yarns.

Such results are obtainable without the use of steam.

Consider the saving in bobbins.

Please send some of your yarn which we will Hygrolit for you without charge. It may please you.

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HYGROLIT

friction is placed on the back beam and the slasher is stopped off correctly, there will not be any kinking of the yarn.

"CONTRIBUTOR No. 4797" also wanted to know why it is that when a set runs out the back beam has more yarn left on it than the rest of the beams. This is due to the fact that in most cases the friction weight is placed on the back beam, which causes the yarn on this beam to be stretched more than the yarn on the other beams.

I think the best way of getting the same tension on all the beams of a set is to have the creels in perfect line by means of the yarn stand screws, care being taken to see that these screws are used for this purpose only and not to place friction on the beams, and the proper amount of tension placed on the back beam by means of a friction rope.

CONTRIBUTOR No. 5065.

More About Cone Winding and High Speed Warping.

Explains how operatives on winders get higher production than spooler hands.

EDITOR COTTON:

I have noticed the question sent in by "CONTRIBUTOR No. 6008" in the January issue of COTTON, as to the running of 25,000 pounds of 30s warp yarn per week of 55 hours on high speed winders and warpers.

Replying to this contributor, I believe that he should have two high speed warpers to run at about 400 yards per minute. I am assuming that he will have an average of about 400 ends per beam and that he will run about 30,000-yard beams. I believe that he should have five high speed cone winders of 90 spindles each to wind on wood cones. These winders should run around 750 yards per minute. The winder hands would have 45 spindles each and should turn off about 2800 pounds per week each. This would give a total of nine winder hands to operate these machines.

The following is the total labor requirements as based on what we are doing: One section man, one yarn and beam man, one warper tender, one creeler hand, and nine winder hands, making a total of thirteen.

"CONTRIBUTOR No. 6008" asks as to how many hands he can save by putting in winders and high speed warpers. He does not give the number of hands he now uses, but from the foregoing lay-out he can figure how many he would save. This contributor also asks as to why some people claim that yarn can be wound cheaper than it can be spooled. Of course spooling conditions in different mills vary to a great extent. There are a few fundamental reasons, however, why it is easier for a girl to operate a winder than it is to operate a spooler. In the first place, in running a spooler, the spooler hand has to grasp the running spool and hold it still while tying the knot. Most mills now use Boyce weavers knotters on their spoolers. In operating this knotter it is necessary for the two ends to be slack when the knot is tied. This is a little inconvenient to the spooler hand in having to hold the spool steady and at the same time slacken up on the end as the knot is tied. Some mills have found it necessary to increase the price per box of yarn in changing from chicken head knotters to weavers knotters.

On a cone winder the cone stops when an end breaks, It is, therefore, easier for the winder hand to pull the loose end from the dead cone and tie the knot with the end slack. Since the cone runs freely on the winder spindle there is no trouble in pulling this end back and of course it is not necessary to hold the cone steady.

Another fundamental difference between winding and spooling lies in the fact that the yarn speed on a cone winder is uniform from the beginning of a cone to the end, whereas on a spooler the yarn speed is very low at the beginning of a spool and several times higher when the spool is full. For example, the yarn speed, when a piece spool is placed on the spooler spindle is probably around 150 yards per minute. This is based on spooling from filling-wound bobbins at a spooler spindle speed of around 1,100 r.p.m. When this same spool is filled up to about 4 inches in diameter, the yarn speed will be about 385 yards a minute, or about 2½ times as fast. Assuming that a bobbin contains 3,000 yards of yarn, it will run for 20 minutes when the spool is practically empty and eight minutes when the spool is practically full. From this difference in speed it can be seen that it is impossible on a spooler for the bobbins to run out consecutively. On a cone winder, however, the yarn speed is constant, and if the bobbins are placed on the spindles and started up consecutively, the same bobbins will run out consecutively; and the winder hand will work steadily from one spindle to another along the side of a frame and will not have to jump about over a distance of several spindles as bobbins run empty. Since it is not possible for the bobbins to run out consecutively on a spooler, the winder hand must walk a distance of several spindles spaces between bobbins and this walking time is lost, so far as efficient production is concerned.

In connection with changing to winding, I might clear up a point raised by a recent visitor as to increasing the number of spindles per winder hand for the purpose of increasing winder hand productions at the sacrifice of machine efficiency. This visitor brought up this matter, and cited some figures showing that five minutes is required to wind off a bobbin and assumes that the winder girl maintains an average speed of seven spindles per minute. From this he obtained the result that the winder girl should have 35 spindles. His method of figuring would seem to be all right, except for a few rather small considerations which he did not mention. For instance, he did not take into account the time required to change full cones and to piece up broken ends. These items, however, are a comparatively small part of the total work of the winder hand, and a big majority of her time is spent changing bobbins. There is, of course, no need in giving a winder hand a lot of extra spindles which she cannot keep up. On

the other hand, a winder hand should have enough spindles to where she can change all of her bobbins in the time required for one bobbin to run empty. We have found, however, that giving her a few extra spindles does increase her production, at the sacrifice of machine efficiency, because it keeps her keyed up to a higher speed in trying to keep up with her job.

Using the figures quoted and assuming that 35 spindles is the theoretical number which a winder hand should have, her production would probably increase slightly if she were given say 40 spindles. This man was undoubtedly correct in saying that if she were given 65 spindles there would be no further increase in production. It has been our theory that the number of spindles given a winder hand should be increased to a point where her production in pounds per day stops. This number of spindles can be calculated by giving her more spindles than she can possibly keep running and timing her to find out the number of bobbins she can change per minute and the number of broken ends she can tie up per minute. With this time figured out for each winder hand it is then possible to give each one the number of spindles which she should have. While we have found that the speed of the majority of winder hands will average up pretty closely together, there will be some who are exceptionally fast and some who are unusually slow. We give the average winder hands the number of spindles based on the average speed. Exceptionally fast ones are given more spindles and the slow ones are given fewer. This permits the faster ones to make more money and works as an incentive to the others to speed up.

CONTRIBUTOR No. 6035.

"No difference at winding; saving made at the warpers," according to this man's experience.

EDITOR COTTON:

In answer to "CONTRIBUTOR No. 6008," there has been no direct change in cost per pound due to our changing from spooling to winding; there is a saving at the warping in favor of winding, due to the larger package made at the winding.

We had six plain warpers, with one girl on the fronts and three girls tying in. We now have two high speed warpers with one girl on fronts and two tying in; the tying-in hands also tie in on twisters.

With no other work to do, and running constantly on one number, one girl could do the tying-in on the new warpers, where three were required on the old warpers. Running, as we do, eight and ten different numbers of yarn, and several grades of cotton, requires much changing, and one girl could not do the work. This changing is some item. Our yarn ranges from 7s to 15s.

If a girl has all the spindles she can keep busy on with a spooler, and they keep her working to her full capacity, she could do no more, even though she was winding instead of spooling. If the girl is not kept busy then she should be given more spindles, or the speed increased on those she has; this would hold good on either winder or spooler.

CONTRIBUTOR No. 6014.

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Tests and Experiences as to Effect of Different Size Top Rolls on Yarn Number.

A compilation of reports particularly referring to results of buffing cork rolls, and the effect on yarn variation.

EDITOR COTTON:

I have read the question with regard to the effect of oversized and undersized top rolls in spinning. The application of a little horse sense to this question leads me to agree with "CONTRIBUTOR No. 6029" that a larger diameter on top rolls, whether cork or leather, will tend to give less skidding in the draft and consequently a little lighter yarn, for, as he says, the larger roll will undoubtedly have a greater contact surface, and so, as before stated, the large roll will not be so apt to slip or skid as the fibers pass between the top and bottom rolls.

However, I doubt if any laboratory test would be sufficiently accurate to detect this variation. I have, through experience, found that cork will make a little lighter yarn than new leather rolls. I attribute this to the fact that cork has a better gripping surface than new leather. This is not true when you compare old leather and old cork, due to the fact that leather, after having been in service for awhile, will improve in drafting quality while cork will lose some of its drafting quality after being in service for awhile.

Your contributor is correct in his contention that a dry saddle or anything else that will increase the torsion or friction on the top roll will result in a heavier yarn because this condition produces this very skidding effect to which I have referred. This is a very interesting question and I am glad that it was brought up.

CONTRIBUTOR No. 6031.

EDITOR COTTON:

This is in reply to the question of "CONTRIBUTOR No. 6029" as to whether turning down or re-buffing cork rolls gives a variation in yarn number.

It is the opinion of the writer that it undoubtedly does. This variation, however, comes about as much from loss of cushion as from any other of its possible causes. When a new cork roller is put in and is well oiled, you have the most satisfactory drafting condition, as the new cork is reasonably soft and gets a good contact with the steel roller. This will, for quite a while, give very even yarn, as free from variation as the roving from which the yarn is being spun. This drafting condition is very forcibly indicated by the fact that in changing from leather to cork on coarse flyer frames it is always necessary to change the draft in order to get the work as heavy as it was before changing.

We have run a great number of tests over a period of eight or ten years with cork rolls on almost every grade of work and find that for some work cork is most satisfactory, both in quality of product and economy, while on other work we find leather to be better. A very interesting test which will no doubt cast some light on the question being discussed is as follows:

Four kinds or grades of rolls were used, namely, new cork, cork that had been running six months or more, new leather, and old leather. The result of this test showed that for good running, better yarn as far as evenness, variation, breaking strength, etc., the rolls would rank as follows: New cork, first; new leather, second; old leather, third; and old cork, last. The poor showing made by the old cork is due to the change in the surface of the roller which had become pitted and hard, presenting a slick surface to the steel roll, causing slippage and uneven drafting. These old cork rolls can be rejuvenated, partially, by re-buffing, but great care should be exercised in rebuffing cork rolls. There is absolutely no need to cut all of the roll away, you need only to take off a very small amount to remove the slick, hard and pitted surface. If you buffed 1/16 to 1/8-inch of the roll, you would be digging too deep into your economy with very little benefit if any, and would be rapidly approaching the condition of having the rolls too small to turn freely.

When cork rolls should be re-buffed and at what diameter should they be re-covered, the writer would not attempt to say, as different classes of work require different rolls and each spinner must determine this from his own experience.

Small rolls and dry or un-oiled rolls cause variation for the same reason, that is, they are hard to turn, lagging and slipping back, giving thick and thin places in the yarn.

CONTRIBUTOR No. 6030.

Is It Practical to Turn Down Whorls?

This Man Says "No"—

EDITOR COTTON:

I note the question of "CONTRIBUTOR No. 5091," who says that the whorls on his spinning spindles are varied sizes, caused by long wear and replacements, that his standard size is 7/8-inch diameter, but that his whorls now run in sizes from 3/4-inch to 7/8-inch. He wants to know if it would be practical to turn all of the whorls down to 3/4-inch diameter, and thereby obtain a new standard size for the whorls, taking care of the change in ratio of the cylinder to the whorl by changing the twist gear.

I do not believe that it would be at all practicable for him to turn down the whorls to 3/4-inch diameter, and that the best solution would be to have new whorls placed on his present blades if they are of sufficient quality to warrant this. If his spindles are not of good enough quality to warrant this, and he is not able to buy new spindles, the next best solution, in my estimation, would be to gauge all of the whorls and separate them into three classifications as near as possible, say 3/4-inch, 13/16-inch, and 7/8-inch, and then use each classification so far as possible, on frames to themselves, making note of these so as to allow for the difference in the twist constant by using different twist gears on the respective frames. This of course would entail right much work, but in my opinion it will be much more satisfactory and economical than trying to turn down the whorl. For in doing this, I do not believe that he would be able

to get a smooth enough polish where he turns them down, and probably would experience a great deal of difficulty with turned down whorls wearing out the bands. CONTRIBUTOR No. 5092.

—while this man says, "Yes".

EDITOR COTTON:

The question brought up by "CONTRIBUTOR No. 5091" relative to turning down worn spinning whorls to a standard size is an interesting one.

Recently the writer was in a chambray mill where variation in twist produced a decided variation in shade. To overcome this condition the whorls were calipered and it was found that 1/48-inch smaller diameter whorl made the same difference as one tooth of twist. Then the spindles with the same diameter whorls were put on the same frame or frames and the proper twist gear used. This isn't a fool-proof procedure nor one that will absolutely remedy the trouble, but it is better than mixed whorl diameters on the same frame.

Particular inquiry has been made of one spinner who turned down several thousand whorls from 13/16-inch to ¾-inch. The results have been highly satisfactory and the front roll speed has been increased six revolutions on 30s warp by changing the twist gear to correspond with the new twist constant. In order to have the bands fit the smaller whorls properly a 9-strand band of 2.50-hank roving is being used instead of the 11-strand band previously used. It is stated that band life is satisfactory and no more than normal slippage is noticed.

The question arises whether it would not be better to replace all of the whorls with new ones of the original size. Several points should be taken into consideration in this regard.

1. What is the condition of the blade and point of the spindle? If many of the blades have been bent in the course of years, and if the points have been worn off, and it is not desirable nor practicable to rework these blades, then the expense of new whorls would not be justified.

2. What is the style or model of the spindle? Some spindles made in former years will not hold the bobbins firmly in place at the high speeds of today. The writer would not buy new whorls for these old style spindles. If the blades are found to be in good condition it might be possible to use a newer style whorl which would hold the bobbin properly.

3. How many years before the frames will be obsolete? A turned-down whorl, under ordinary conditions of wear, should have sufficient stock to give service for ten years or more, and if the frames would be obsolete within that time new whorls would not be a good investment.

The writer would make the general statement, without knowing the full particulars, that it would be advisable to turn down the whorls of "CONTRIBUTOR No. 5091" to a standard size, provided the work be done accurately and the bands adjusted to suit, and provided pulley changes could be made in case the amount of turning required caused too great an increase in speed. CONTRIBUTOR No. 5093.

LOOK OUT *for the Guy with the knife!*

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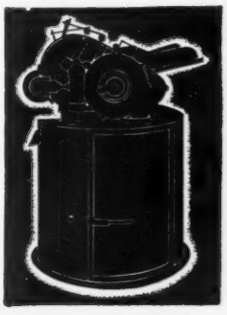

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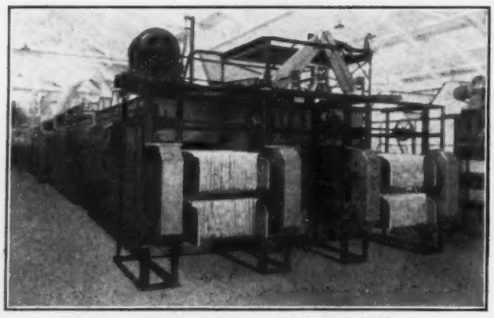

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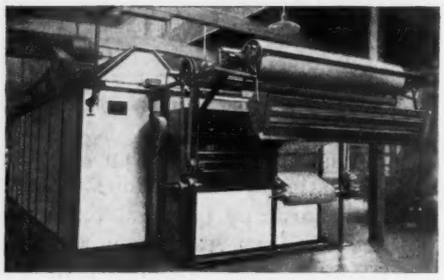
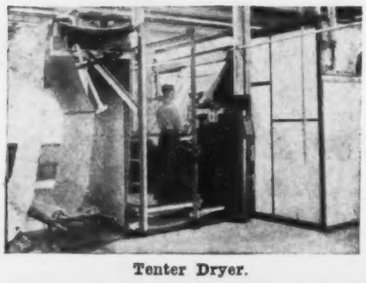


Automatic Loop Dryer.



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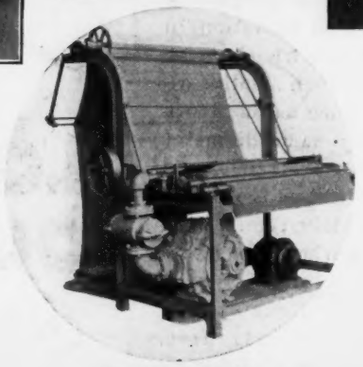

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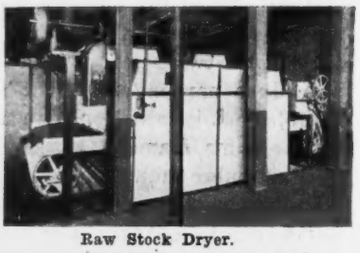

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Opinions on Spinning Band Consumption and Construction.

One man suggests a tubular braid for spinning bands. Would you like to try this idea?

EDITOR COTTON:

This is in answer to "CONTRIBUTOR No. 6001", with regard to the consumption of spinning bands. He states that during a period of 15 weeks, his mill, which has 15,272 spindles running night and day, tied on 1,272 bands, or about 8⅓ per cent weekly of all the bands.

I would say that his band consumption is not very excessive, because, according to his statement, his bands run about 15 weeks, which would mean that he would have to tie about four bands to the spindle in a year. I do not call that excessive.

The bands that we use are constructed a little differently from the construction of the bands which he describes. The construction of the bands we use is as follows:

They are made entirely of 2.00-hank roving, with 4.40 twist per inch. Five of these roving strands are twisted the first time on the band machine with 4.00 per inch, and the second twist per inch on the finished band is 7.00. The finished bands weigh 88 bands to the pound. We use ⅞- to 15/16-inch cotton.

I think that the way bands are tied on has a lot to do with how long they run. "CONTRIBUTOR No. 6001" does not state what kind of a knot he uses. All spinning bands as a general thing break at the knots, and therefore I think the knot is very important.

There are several kinds of knots used, and some of these will cause slack bands and soft yarn. Of course when a band is making soft yarn it should be broken off. We use the looper knot and there is positively no soft yarn when this knot is used, for when the band becomes the least bit slack it will drop off and of course the bands come off more in rainy weather, which is the case regardless of the knot used.

We have 17,952 spindles and we tie on an average of 1,399 bands in 60 hours.

A. E. S. (GA.)

EDITOR COTTON:

It is my opinion that the band consumption in the mill of "CONTRIBUTOR No. 6001", whose question appeared in the January issue, *is* excessive. His band, 7 strands of 3.00-hank roving with the twists he mentions, is about standard practice. Some use 5 strands of 2.00-hank roving, and some 6 strands of 2.50-hank roving.

Where a heavy spindle, say an old Whitin gravity large, or a new large gravity No. 1, is used, it is advisable to put 4 to 5 strands of 8s yarn with a twist multiple of 3.80 to prevent excessive breaking, whereas this yarn would be very objectionable if it were a light spindle. The yarn type is helpful on a heavy spindle going 5,800 to 6,500 r.p.m. and higher. The light spindle wouldn't need it at the same speed. In either case, the ⅞-inch cotton he uses is a little short; 1-inch would be better.

All of this is assuming that he is using the proper

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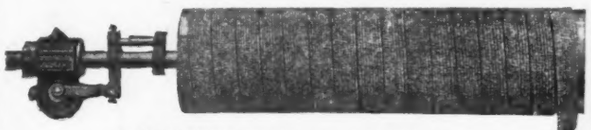

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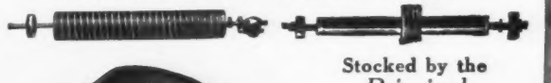

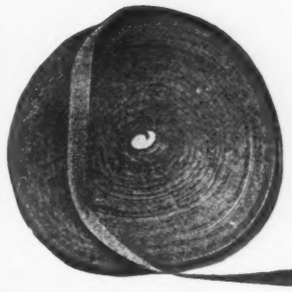

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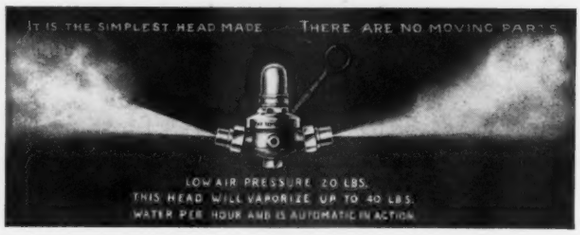
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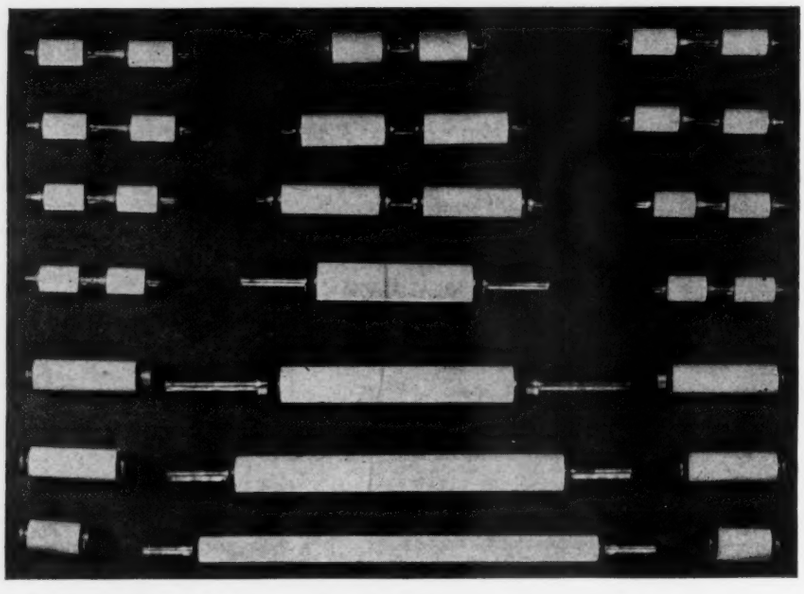


PHILADELPHIA FELT COMPANY

FRANKFORD, PHILADELPHIA, PA.

spindle oil. He had better investigate that the *first* thing. I have seen a room with greater band breakage than his, *due to the oil alone*. When pumped out and replaced with the proper oil, the band trouble was over.

CONTRIBUTOR NO. 6038.

EDITOR COTTON:

I have noted the inquiry from "CONTRIBUTOR NO. 6001" as to his band consumption and method of making bands, the details of which he gives in his letter on page 74 of the January issue. I have no criticism whatever to make of the way he makes his bands, although we make ours a little different; I believe from my observation that he is getting as good a result as we are securing.

What I would like to say on this subject, however, is that I do not like either the spindle band made from roving, or the twisted band or stranded band made from yarn. After many years experience I am convinced that the tubular spindle band, or as sometimes called, the braided band, is the best.

The method of fastening the tubular band is generally by the figure-eight knot. This tubular band is made generally from 16s yarn, is not stranded, and therefore does not ravel. I have found that in fully 80 per cent of the bands made from roving and stranded, that one strand would ravel from the knot. This cannot take place with the tubular band.

Our company has one machine for making this band, and I shall be glad to supply samples of it to anyone interested. In my opinion, the bands now used will be reduced fully 50 per cent; furthermore the weight of cotton or yarn used in making the bands will be similarly reduced.

CONTRIBUTOR NO. 6039.

"Wash's" Opinion on Cockled Yarn.

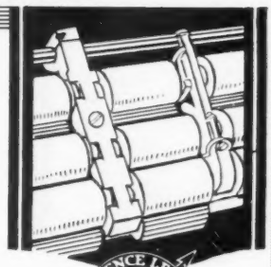
EDITOR COTTON:

The two questions asked by "CONTRIBUTOR NO. 4990" are questions that will surely cause anyone reading them to stop and do a little thinking. He asked what actually takes place when cockled yarn is made on a spinning frame, and why the little soft lump, without twist, which will strike out when the least bit of tension is applied to the thread.

There are three chief reasons for cockled yarn; first, long and short staple cotton being run together; second, rolls being set too close; third, grooved top drawing rolls.

Where the cotton consists of mixed staple, the longer filaments will momentarily check the speed of the top front leather roll—the dwell depends upon the length of the filament under the action of the second roll. As the speed of the second roll is not affected (unless, of course, the back roving has too much twist in it) the shorter fibers are moved forward and lodge momentarily between the second and first roll. When the filament checking the speed of the front roll passes the action of the second roll and allows the front top roll its freedom to revolve again, the short fibers that have lodged are drawn into a cluster, which forms the soft lump. Twist runs to the part of the yarn where

FEWER ENDS DOWN WITH
SPINNA CALF



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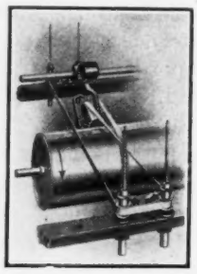

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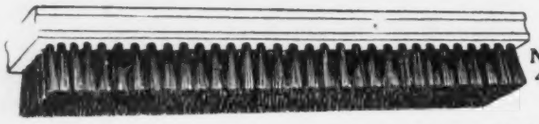

No. 48

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the least number of fibers exist in its cross section. That is why all lumps in yarn remain soft.

After the filament in question has passed the action of the front roll the accumulated twist, due to the dwell of the front top leather roll, will cause excessive twist on each side of the lump and cause the filament to curl.

When the rolls are set too close, cockled yarn will be formed, but not to as large an extent as when mixed staple is used. Neither will curling take place when the rolls are set too close.

A great deal of unnecessary cockled yarn may be caused by a poorly covered roll, or by small grooves existing on the boss of the front roll. A stopped traverse will cause the front roll to become full of small grooves (not detected by the naked eye) that will make a large amount of cockled yarn. This is why I prefer cork rolls. It is very seldom that cockled yarn is made where cork rolls are used.

WASH (R. I.)

An Old-Timer Says—

(Continued from page 75.)

section men each day and kept a record of it as explained.

Of course we tried at all times to be considerate of any local conditions such as a section having a run-out of warps or anything which would take up practically all of the fixer's time. At such times we would not lay out any extra work for him.

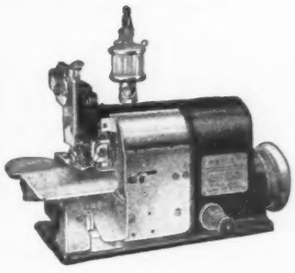
Well, OLD-TIMER, *that sounds like a pretty good system, and looking back over all that you have explained, it seems to me that such a system would make a pretty good fixer out of most any kind of material. You know, here in my weave room I have always noticed that there is so much difference in fixers. One man will run his section with apparent ease, doesn't seem to have to work very hard, and his production and supplies are always in good shape; while another man is working like fury, running around like a chicken with its head cut off, and his supply bill is almost double the other fellow's and even the weavers do not like to have a set of looms on his section.*

Sure, JIM, that is just the way I started out to run a section, as I explained to you at the beginning, but I soon found out I was barking up the wrong stump, and changed to working my head instead of wearing my hands out.

I still contend that running a section of looms is the most fascinating kind of work, and that, with a little system, most any good weaver can be made a good fixer.

(Once again we must leave Old-Timer and Jim, until this series is resumed in an early issue. For those readers not primarily interested in loom fixing, let us repeat that this system has been applied and is used by Old-Timer in every phase of the mill, and that in an early installment he will cover all of the departments of the mill. Next time, he describes the cards used in his check-up system, and starts in the card room in describing its application.

Let us urge you once more to preserve your copies of the present installment and of the one which appeared in February. You will want them later, so clip them out and keep a complete set of these articles.—The Editor.)



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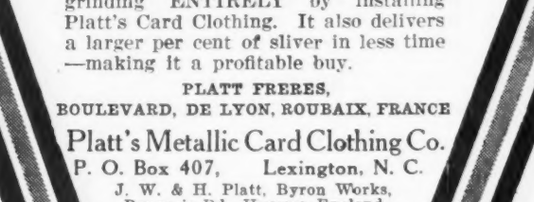

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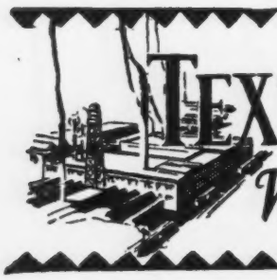

TEXTILE BOOKLETS *Worth Writing For!*

The booklets or catalogs briefly mentioned below may be obtained by any reader of COTTON who will write to the Company issuing them or to COTTON, Grant Bldg., Atlanta, Ga.

52. The Lincoln Twin Disc Floor Machine—showing the many advantages of clean, sanitary floors, the saving of time and labor through using floor cleaning machines and describing in detail the various models of Lincoln floor machines. Lincoln-Schlueter Floor Machinery Co., 218 W. Grand Ave., Chicago, Ill.

54. Shipper's Handy Helper—A forty-eight page booklet giving valuable information on shipping problems, including suggestions on packing, marking, numbering and invoicing shipments and describing the principal items generally used in shipping departments. Southern Shippers Supply Co., 118 Courtland St., S.E., Atlanta, Ga.

55. Interpretation of Analysis for the Layman—An eight page booklet explaining what the various terms used in fatty oil and sulfonated oil analysis mean, enabling the ordinary textile man without chemical education to interpret the various chemical analyses. National Oil Products Co., Harrison, N. J.

56. Technical Service Data—giving information on processes of textile manufacture in the use of oils, softeners, etc. National Oil Products Co., Harrison, N. J.

57. Reducing Textile Costs and Troubles telling all about the benefits of water treatment. Permutit Co., 440 Fourth Ave., New York, N. Y.

61. Belt User's Book—76-page book with suggestions, rules, tables and charts helpful in the purchasing, application, use and care of belting. J. E Rhoads and Son, 35 North 6th Street, Philadelphia, Pa.

62. Rubber Products for the Textile Industry—a 40-page booklet giving a wealth of information on the proper selection, installation and operation of rubber belts, together with charts showing horsepower rating pulley sizes, V-belt sizes, also information on all types of hose and rubber covered rolls used in the textile industry. Manhattan Rubber Mfg. Division of Raybestos-Manhattan Inc., Passaic, N. J.

63. S-W Paint Standardization Plan—valuable booklet telling how protective coatings can effect economies in plant operation and maintenance, describing how each surface is finished to best meet its specific needs, giving ideal lighting and sanitary conditions and economies in increased production. Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio.

64. Efficiency and Performance of SKF Roller Bearing Spindles—A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., 40 East 34th St., New York, N. Y.

65. Why Cooper Hewitt Light is Better Than Daylight—a 16-page booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Elec. Vapor Lamp Co., Hoboken, N. J.

66. Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176, describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

67. Specification and Size book, I-31, convenient reference book giving complete information and prices on Rockwood Short-Center Drive for textile machines. Rockwood Manufacturing Company, Indianapolis, Indiana.

68. Rockwood Pulley Specifications, a reference booklet giving complete specifications of 2,540 stock sizes of pulleys. Rockwood Manufacturing Company, Indianapolis, Indiana.

69. Monel Metal Equipment for the Textile Industry—a 50-page booklet with more than 100 illustrations of various items of equipment for textile mills. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

70. Fafnir Ball Bearings for One-Process Pickers—outlining the advantages of ball bearings in guaranteeing smooth accurate motion particularly on eveners, as well as uninterrupted production, ease of operation and cleanliness of bearing units throughout the one-process pickers. Fafnir Bearing Company, New Britain, Conn.

71. Short Cuts to Power Transmission—A 74-page handbook for belt users, incorporating the most important phases of practical belting practices, including considerations in belt buying, care of belts, making belt joints, belt calculations, causes of belt troubles, etc. Flexible Steel Lacing Company, 4619 Lexington Street, Chicago, Ill.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

73. New Reeves Catalog T-32—A treatise on efficiency speed control—including valuable information of special importance to textile industry men and production executives outlining advanced methods of speed regulation. Reeves Pulley Company, Columbus, Indiana.

1. Cotton Picking, Carding and Spinning—Covered by three different catalogs. Picking catalog covers Opening and Picking Machinery; Card Room catalog covers Cards, Combers and Roving Frames; Yarn Machinery catalog covers Spinning, Twisting, Spooling, Quilling and Reeling By Whitin Machine Works, Whitinsville, Mass.

2. Pepperell Equipment—10 page illustrated booklet, showing High Speed Warping from cones as adopted by Pepperell Manufacturing Company after thorough experiments. Installation and product photographs. Issued by Universal Winding Company, Boston, Mass.

4. New Methods of Opening Cotton, also "Brown" Automatic Mixing and Cleaning Distributor — Illustrated booklets showing advantages of Centrif-Air Cotton Cleaning System. Pamphlets also on better picking and carding and pneumatic trunk line cleaner. Issued by Centrif-Air Machine Company, Atlanta, Ga.

8. "Textile Brushes"—10 page booklet illustrating brushes for cleaning every part of mill. By Gastonia Brush Co., Gastonia, N. C.

10. Leathers, Textile—Booklet No. 101, 48 pages. Illustrated. Showing BONDARON Check Straps—Lug Straps—Harness Straps—Pickers—Belting, both round and flat, etc. Horsepower tables and other interesting information. By Charles Bond Company, 617 Arch Street, Philadelphia, Pa.

11. Whitinsville Rings—16 page illustrated booklet. Describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

12-A—Instruction Manual for Type K Bobbin Cleaner. Also Instruction Manual for Utsman Bobbin Cleaner—two separate booklets describing adjustments of machines outlined, and also describing effect of bobbin shapes upon the cleaning process. These booklets intended for users of machines outlined. Applicants should designate which booklet is desired. By the Terrell Machine Company, Charlotte, N. C.

12-B—Instruction Manual for the Termaco Roving Bobbin Cleaner—booklet in four sections on adjustment of machine; on how to use machine to best advantage in reducing waste and saving labor; parts catalog; description of new attachments which can be applied to earlier models of the machine. By the Terrell Machine Company, Charlotte, N. C.

15. The Powers System of Thermostatic Control—"Slasher Room is Bottle-Neck of Textile Mill." 18 page illustrated booklet showing importance of proper treatment of cloth in slasher room and advantages of Thermostat over hand control. Also room temperature control illustrations. Issued by Powers Regulator Co., 2789 Greenview Ave., Chicago, Ill.

18. Popular Industrial Chemistry—162-page handbook for dyers, chemists, finishers, purchasing agents. By Kali Manufacturing Company, 1404 No. Front St., Philadelphia, Pa.

20. Bleaching, Dyeing, Finishing and Printing Textile Goods—70-page booklet containing interesting information on faults and methods in finishing goods, useful tables and definitions. By Bosson & Lane, Atlantic, Mass.

21. Warp Sizing and Composition of Cotton—Folder containing reprints of articles carried by textile publications of interest to progressive mill superintendents. By Seydel-Wooley Co, 748 Rice St., Atlanta, Ga.

22. Tragasol and Its Uses—Booklet, 60 pages, constituents and properties—Dissolving and preparation—sizing and dressing of yarns—cloth finishing—miscellaneous. By John P. Marston Co., 247 Atlantic Ave., Boston, Mass.

23. Practice of Rayon Sizing in American Mills, Raygomm, Lakoe Gum—Three booklets on products for sizing and finishing rayon and other textiles, presented by Stein Hall & Co., Inc., 285 Madison Ave., New York, N. Y.

25—"Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

28. Akron Belting.—Practical rules and general information for users of belting with belting catalog. By Akron Belting Co., Akron, Ohio.

29. Continuous Card Stripper—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

30. Lubrication of Textile Machinery—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York and New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

36. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machine with general information on subject of full fashioned knitting.)

41. Budget Control—40-page booklet showing how each part of business budget should be prepared and principles of its effective operation together with a summary of benefits. By Ernst & Ernst, accountants, 27 Cedar Street, New York, N. Y. (This company also has available booklets on Standard Costs, Business Control Through Analysis, The Better Wage, Factors to Consider in Working Out Mergers.)

42. Textiles and the Telephone Typewriter—6 page booklet on telephone typewriter service for communication between mills and selling houses. By American Tel and Tel. Co., Long Lines Department, Atlanta, Ga.

44. Points of Interest in and Around Atlanta—36 pages. Illustrated, describing places of scenic and historic interest in Atlanta in particular, and the Southeast in general. Atlanta Biltmore Hotel, West Peachtree, Fifth, Sixth & Cypress Sts., Atlanta, Ga.

45. Fidelity Universal Ribbers—A forty-eight page booklet showing the advantages and many styles of ribbed fabric and describing in detail and illustrating the latest developments in ribbers. Sent free on request by Fidelity Machine Co., 3908 Frankford Ave., Philadelphia, Pa.

46. Mundet's New Black Book—Including specifications for the installation of cork-pipe covering under various conditions, telling how thick the insulation should be, listing the sundries that are needed with cork pipe covering—showing what to do when pipes are close together, explaining how to order, prices, etc. Copy sent free to anyone interested in cork pipe insulation. L. Mundet and Son, Inc., 450—Seventh Ave., New York, N. Y.

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Production Methods, Tolerations, and Selling Methods for Half-Hose

By Fred T. Gaines

AN inquiry from "Contributor No. 6012," published on page 134 of the February issue, asked a large number of questions concerning various problems in manufacturing half-hose, tolerance standards, merchandise standards, etc.

The accompanying article was written by Mr. Gaines in answering these questions. He has repeated each inquiry in turn in giving his answer, so that this article is complete and self-contained.

We feel sure it will interest every hosiery manufacturer, particularly those making half-hose, as covering some of the major problems confronted by the mill manager and superintendent.—The Editor.

A FEW ever - arising questions were presented by "CONTRIBUTOR NO. 6012" in the February issue, and these are covered here and viewed from a few angles which we hope will produce some information of benefit to fellow sufferers and the knitting industry as a whole.

The contributor's questions apply to the production of men's fancy half-hose using, for equipment, two sets of 220-needle Model HH spiral machines. The constructions referred to are plaited rayon and acetate with high-spliced heel and double sole, and, presumably, mercerized top, heel and toe. Quality versus low end merchandise of cross dye types are primarily concerned, with ingrain receiving some consideration.

In order to co-ordinate questions and discussions and for the sake of simplicity, each question will be briefly dealt with from at least one angle as presented.

(1a) What are the proper links to be run in the chain for knitting 9½, 10, 10½, 11, 11½ and 12 sizes respectively, on 220-needle rayon and acetate plaited numbers with high splice heel and double sole in the top quality price range, presumably from $1.65 to $2.00 in regular numbers to the jobbing trade? *Answer*: This question depends partly on the size yarns used so we include these questions.

(1b) What counts of rayon and acetate do you use for similar constructions of the top quality price range?

(1c) Do you find 150 denier over 150 denier a more practical knitting combination for 220-needle work, or is it better to run finer deniers?

(1d) If so, what would be your suggestion on the proper counts to run?

(1e) What counts do you use in the top, heel, toe, high splice and double sole?

Taking up these questions for disposition, we feel the following opinions based on wide experience are along the lines of good advice for answers:

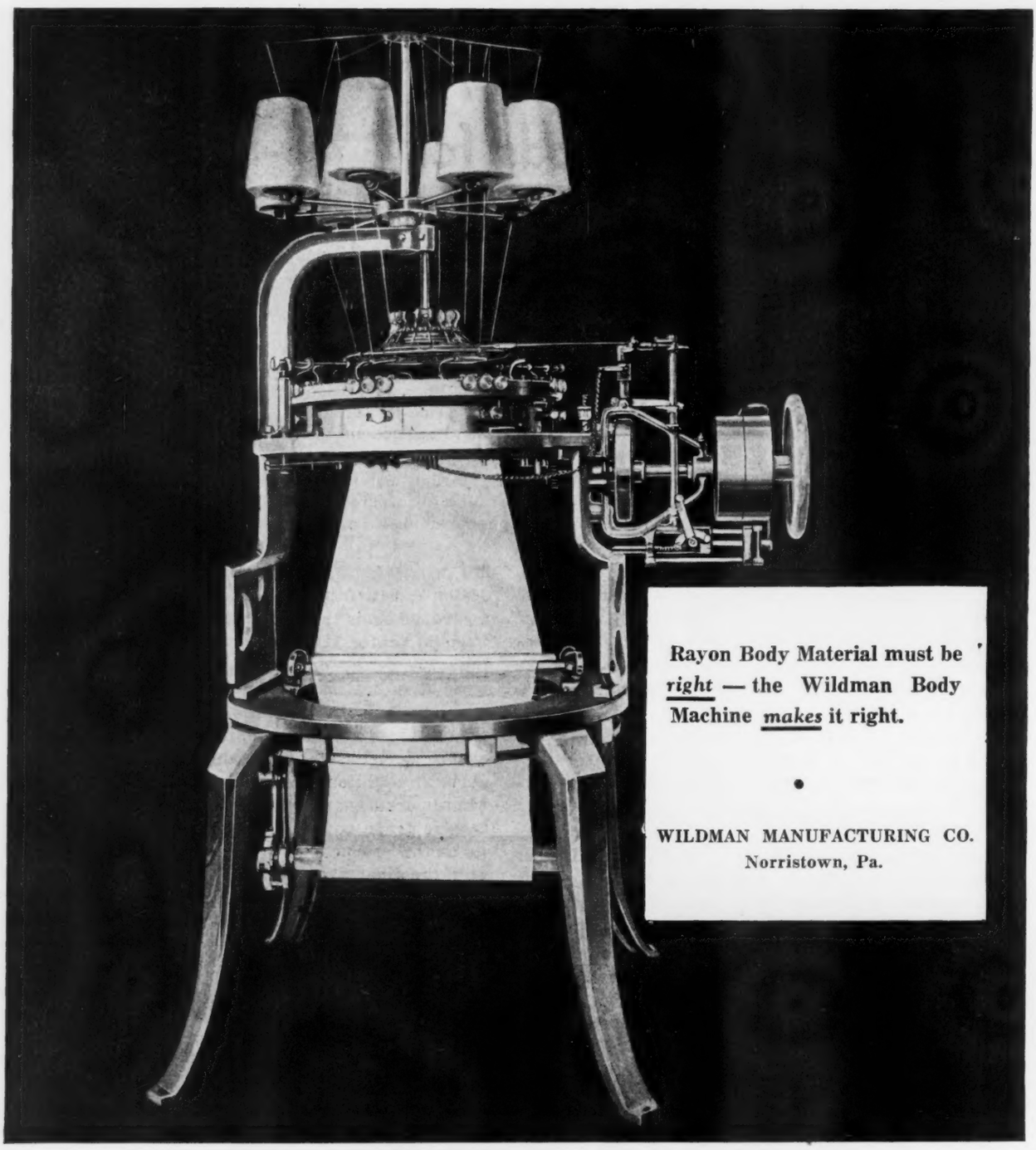
(1e) For the top use 36s/2 combed peeler mercerized, for the heel and toe use 2 ends of 60s/2 combed peeler mercerized, and for the high splice and double sole use 80s/1 combed peeler mercerized.

(1c) 150 denier rayon over 150 denier acetate make a rather heavy construction on 220-needle 3½-inch 48-gauge machines with high splice and double sole. This construction is coarser with fewer stitches per inch than can be obtained if finer counts of yarn are used.

(1b) That is, by using finer counts of yarn the finished product can be made to look like a finer gauge and more refined merchandise at a slightly lower yarn cost than with 150 denier over 150 denier.

(1d) For a face yarn it is not advisable to go too fine on the spiral floating stitch and even though 100 denier is satisfactory and slightly lower in cost on a yardage basis than either 150 denier or 125 denier, I would prefer 125 denier which is slightly higher than 150 denier on a yardage basis. Furthermore, since it is desirous to have a quality product with which to make a reputation, I would prefer using the strongest and best running yarn obtainable, such as 125 denier Sanconize, which is a nitro-cellulose yarn. In addition to other desirable qualities of this semi-lustrous yarn is the benefit derived from extensive trade paper advertising of this yarn which gives the products in which same is used considerable prestige. For the backing yarn either 120 denier or 100 denier acetate is suitable, but 120 denier being so close to the cost of 100 denier on a yardage basis I would say use 120 denier. By all means use the tinted acetate for detecting imperfects while knitting. With 125 denier face yarn and 120 denier backing yarn, making a total of 245 denier, a wider range of adjustment for knitting is obtained and the total cost is less than 150 denier over 150 denier at present list prices.

This has prepared us for the answer to (1a). The shape and dimensions of the drying forms in various mills have something to do with the chain to use on different sizes. To begin with, a set of sizing boards of the same shape and dimensions as the drying forms should be obtained. Then, having chosen the counts of yarn to use and adjusted the knitting to give the desired stitches, elasticity and same number of stitches per inch in the leg that are in the foot, it is only necessary to begin with some size, say eleven. (The finer the total counts of yarn used in the body than selected above the greater will be the number of links required in the leg and foot.) On the basis of 17 links in the leg and 15 links in the foot for the selected counts of yarn, make a test by dyeing and boarding to determine if the goods finish the correct dimensions. If not, add or take out links



WILDMAN
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where necessary if dimensions are off more than 6 courses per inch. If less than 6 courses per inch, tighten or loosen the stitch for correction, bearing in mind that the stitch in the legs must be adjusted with that in the foot to keep the same courses per inch. If the foot needs adjusting for size when the leg is right and adding or taking out a link does not correct the size then it is necessary to compromise and divide the difference between the foot and leg.

Having established a standard on size eleven and assuming the leg lengths are the same for all sizes it only remains necessary to take out or add links for smaller or larger sizes respectively. The courses per inch are known in the finished goods by counting and since each chain link represents 12 courses, if there are 24 courses per inch, in the foot, then 1 link less than (15) in size 11 gives (14) in size 10½, and 1 link more (16) gives size 11½. In all probability 1 link will be less than ½ inch and, in this instance say, there are 28 courses per inch for simplicity's sake, then for size 9½ we would want 42 courses out of the foot of size 11 to get size 9½, and this means that 3 links or 36 courses out are as near as 4 links or 48 courses and with 3 links out it would be necessary to tighten the foot and leg, which I would choose instead of taking out 4 links in the foot and 1 link in the legs and loosening both the foot and leg to get the right size.

This I think is sufficient evidence to say that with size eleven, taking 17 leg links and 15 foot links, smaller sizes are obtained by removing 1 link from the foot for each respective half-size smaller and adding 1 link to size eleven chain for each respective half-size larger and adjusting the stitch if necessary on sizes other than eleven for exact fits. This results in the following size and chain scale:

Size	9½	10	10½	11	11½	12
Leg Chain Links	17	17	17	17	17	17
Foot Chain Links	12	13	14	15	16	17

This assumes a standard leg length of 9½ inches with 5½-inch top. To allow for shrinkage after removing from drying form, foot lengths should be ½ inch over size for full foot size finish with the shank or leg of the drying form correspondingly longer. For example, the foot length (standard method of measurement) should be 11½ inches long for size 11 and the shank or leg of the drying form should be 10 inches long on all sizes, thereby insuring full sizes, long after merchandise is put up. One leg length for all sizes 9½ to 12 is most generally accepted as standard, although the leg or shank of a size 12 really should be longer than the smaller sizes, or in other words, beginning on size 9½ as the foot size increases in length, the leg should also be increased slightly in length but very few mills use this method.

For Standard Method of Measurement referred to see Figure 1.

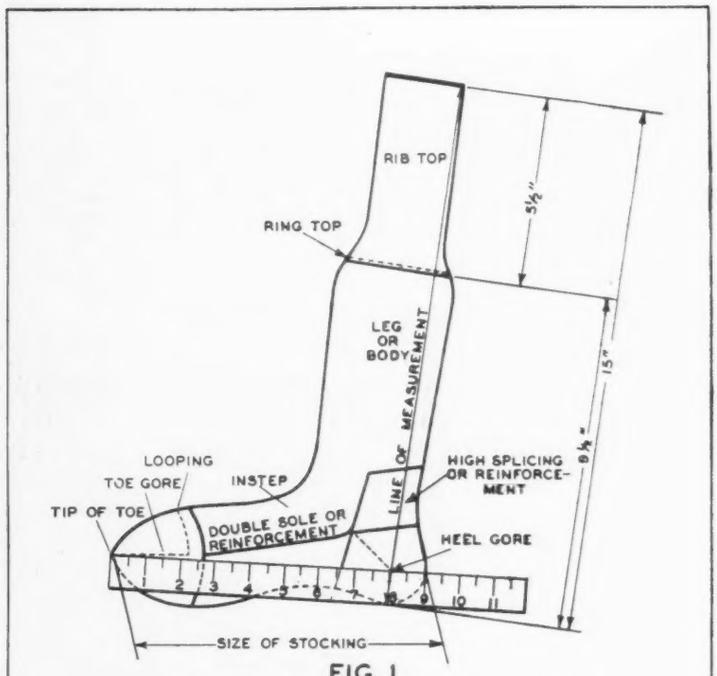

FIG. 1
APPROVED METHOD FOR MEASURING HOSIERY

Question (lf). How many links do you run in the ring toe for each size? Answer: A balanced ring toe for all sizes to make the best appearance offers three choices; first, the one kick or four-course margin before beginning the toe or narrowing down; second, this margin kick plus one full link and third, the margin plus two full links. These being 4 courses, 16 courses and 28 courses are approximately ¼ inch, ½ inch and 1 inch ring toes respectively, either of which is very neat. Of this plan, the writer prefers using the margin kick and one link, 16 courses. This is discussed further in the answer to the next question.

Question (lg). Do you find it practical to knit each size, or do you find that the cost is greater? (Please give your opinion as to higher price range and lower price range).

Answer (lg). It is practical to knit each size. Naturally the greater the detail assumed in manufacturing the greater is the cost. By this I mean that it is more expensive to knit six sizes to finish six sizes than to knit three sizes or full sizes and obtain sizes and half sizes from these; however, for strict class merchandise each size by half sizes is knit and finished accordingly.

To further illustrate the greater cost involved in knitting each size by half sizes against the compromise method of knitting fewer sizes out of which to finish a full range of sizes, let's take six sizes against three sizes for knitting to finish six sizes from 9½ to 12. This means for six knitting sizes against three, there is double the detail involved in keeping records, changing sizes, keeping the work separate, storing in the grey, bagging for dyeing and

Chipman chooses BANNER

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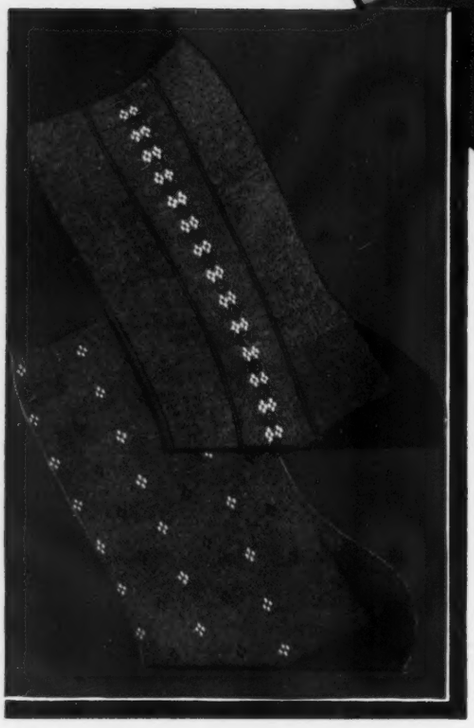

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keeping separate for dyeing, and in fact all through from knitting to boarding. In addition, grey stocks are greater in proportion and consequently money invested greater. And last but not least is the double possibility of mixed sizes in processing.

Knitting Three Sizes for Six.

Now in the interest of the half-hose manufacturer, the writer's plan for keeping down the cost of knitting half hose in all sizes will be described. This plan is simple and is the nearest equivalent to knitting six sizes to finish six sizes that has come to my attention. It was worked out and adopted after much thought and study based on broad experience, and while there may be mills using plans as economical there is none better. This plan may be challenged as not being original but it has been used for a considerable period and when adopted it was wondered, why not sooner. Before adopting it nothing like it was ever observed in operation or even suggested, so here it is:

Make three sets of sizing boards size 9¾, 10¾ and 11¾ using drying form dimensions, but having 9¾ foot length of the sizing board half way between size 9½ and 10 drying form, and so on for 10¾ and 11¾. This gives the following grey and boarding size table.

Boarding and finishing sizes	9½-10	10½-11	11½-12
Grey Goods knitting sizes	9¾	10¾	11¾

Now part of this plan includes a simple chain system for changing sizes as well as a means of telling what the knitting size is through all processes if work gets mixed or separated from lot tickets during processing.

This expands on question and answer (1f)—the number of links to run in the ring toe—and is simply as follows: For 10¾ use the going into ring toe kick of four courses and one link, making 16 courses in the ring toe. For 9¾ two links less in the foot than in size 10¾ are necessary so remove one link from the ring toe (giving a 4 course ring toe) and also remove one link from the foot chain. For size 11¾, two links more in the foot than are in size 10¾ are necessary so add 1 link to ring toe (giving 28 course ring toe), and also add 1 link to the foot chain. Tabulating these results we have finishing sizes, knitting sizes, leg, foot and ring toe chain and total foot chain as follows:

Boarding and finishing sizes	9½-10	10½-11	11½-12
Grey Goods knitting sizes	9¾	10¾	11¾
Leg chain links	17	17	17
Foot Chain	13	14	15
Ring toe chain	0	1	2
Total foot chain size	13	15	17

From this it is evident what a tremendous amount of detail and investment is eliminated all through from records and knitting to boarding. Furthermore, there is a double check on the size if work gets mixed, since the ring toes for different knitting sizes are different and pattern designs ending at ring toe are in most instances different. Knowing this, anyone can separate sizes.

Now in answer to a question which will have to come up to the effect that six sizes cannot be obtained from three knitting sizes. Permit me to answer this with a question. How humanly possible is it to knit men's half-hose sizes closer than within ¼ of an inch of finishing sizes when there are so many varying factors affecting the elastic knit fabric such as machines warming up, yarn varying, room temperature and humidity varying and sundry other influences combined with shrinkage and stretch in finishing?

This three-grey-size knitting system to finish six sizes as outlined is not to be construed as infallible under all conditions but it furnishes a fundamental principle on which to base a simplified manufacturing system that is far more economical than knitting and keeping separate each half-size up to the boarding. The writer has found it necessary in some instances to alter the method to fit particular needs as regards certain patterns and constructions but still adhere to the principle.

Question (2a). Which do you find to be more practical—to have each fixer size his own machines or to have one man size all of the machines? Answer: Both methods are used in regular practice and either is satisfactory. Personally, the writer feels that unless the equipment and production is large enough for a full time sizing and test man it is economy to have the fixers size the work from their own sets of machines. There are several reasons for this. The sizing job is an important detail and requires some one that knows what it is all about. He should know fixing and the requirements for quality work and should also have the confidence of the different fixers so that in sizing up, his complaints as regards the shortcomings of fixers and knitters will receive prompt and serious attention immediately. In other words, if the sizing man is to be responsible for proper sizing, which should include supervision of quality, then the fixers and knitters being indirectly responsible to him must respect his duties and this makes his position at least as valuable as a fixer's. Therefore, when duties do not warrant a full time capable sizing man there is no economy in taking this responsibility away from the fixer for in either case sizing must be correct. Furthermore, when fixers have the full responsibility of the quality of work from their section, they feel more responsibility, and with work from different sections properly identified during the following grey goods processes, records indicate the most loyal, capable and self conscious attention to duty and give an indication of those next in line for advancement.

Question (2b). How often do you have your machines sized? Question (2c). Do you have a test run made daily? If so, do you find that this is an advantage in the efficient operation of the machines?

Answer (2b). Two sizings daily, one in the morning and one in the afternoon are the minimum, and at times extra checks are necessary. Where a night shift is in operation this crew should be held to the same requirements as the day crew. Answer (2c). Test runs are an advantage in the efficient opera-

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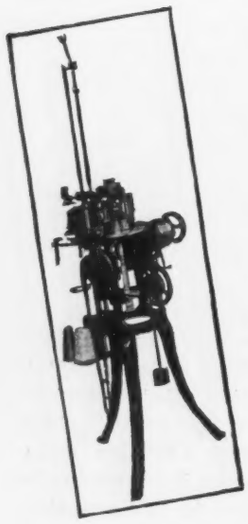

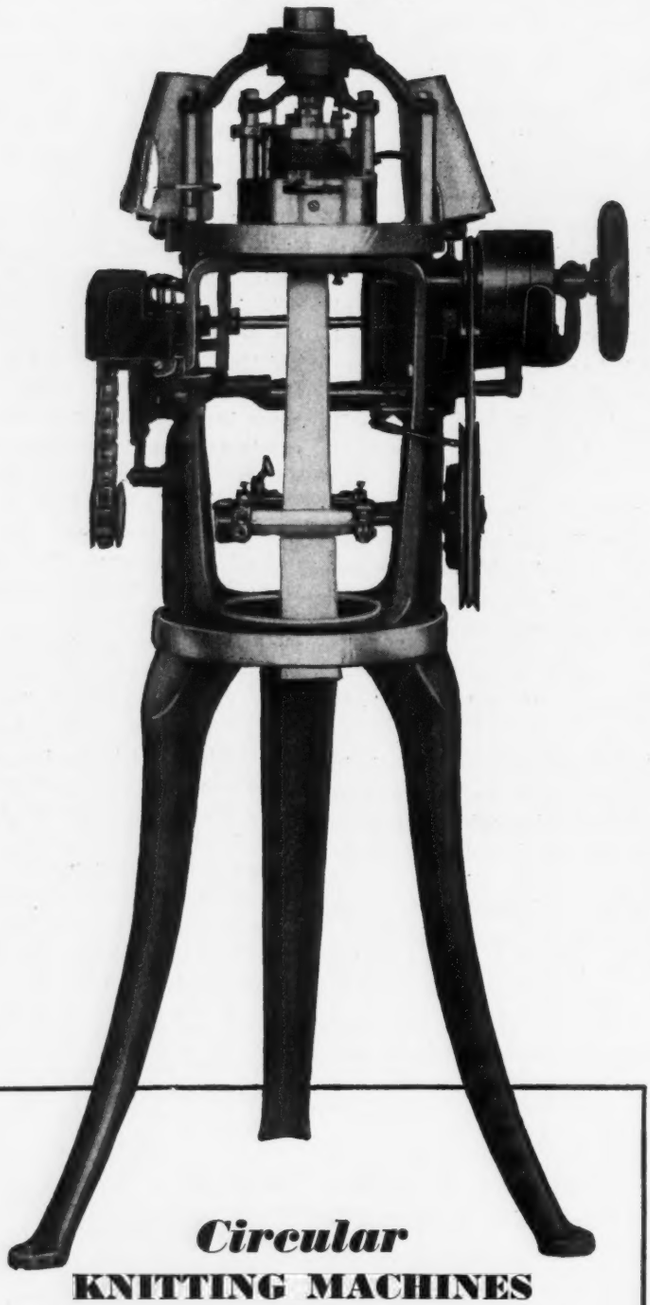

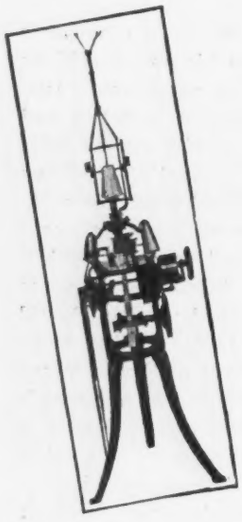

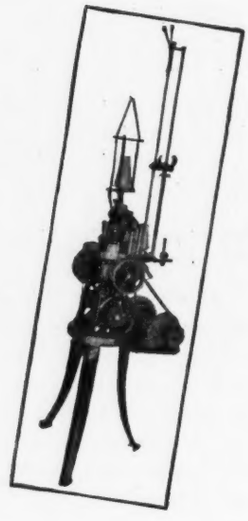

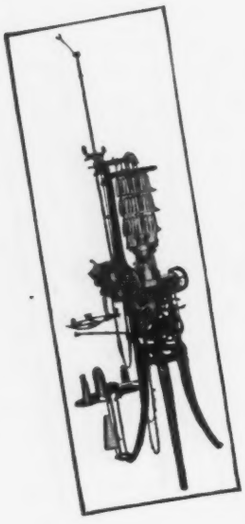

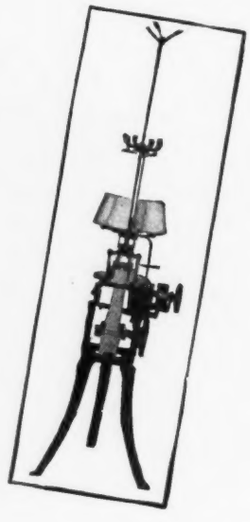

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tion of the machines and while the use of tinted yarns for showing pattern imperfections may minimize them, the test run may reveal other irregularities such as fuzzy needle streaks and off sizes, etc., that are observed in no other way and permits correction on the respective machines before excessive damage is done. For checking up along sizing and test run lines, a good plan is to have the test run made on each shift using the hose from each machine properly pin marked after acceptance as correct on the first sizing round of the day shift. On the second sizing up test run the test is best taken before making adjustments for size to see how closely knitters and fixers are fighting for quality. This procedure may be reversed on the night shift by having the test run taken before making machine adjustments on the first round and on the second test run take samples after acceptance as correct for sizing and workmanship. This method gives each shift a check on the other shift when changing shifts in the evening.

Percentage of Waste, Seconds, Bad Work.

Question (2d). What is the average percentage of seconds and waste and (2e) needle breakage that two sets of 220-needle, HH spiral machines should show respectively? Answer: From one per cent to two per cent waste cannot be complained of considering re-setting machines after fixing adjustments, etc., that are necessary, including cut outs from yarn breakage and yarn running out. In regard to the average percentage of seconds, past experience records taking into consideration yarn changes, complication of pattern, quality of yarn, and construction, as well as price class and tolerations must be considered in this respect. However, a grey goods classification of less than five per cent under the best of conditions cannot be complained of. Answer (2e). Needle breakage is dependent on construction, yarn quality, fixing ability and tolerations of what class work is passable in first quality finished work. In the writer's opinion 5 cents per dozen for needles, sinkers, hooks and cast-offs is the outside limit to strive for and this is plenty high.

Question (2f). What percentage of bad work should be tolerated in knitters letting bad work go through to the inspectors in perfect lots? (2g) What is the best system for handling work of this kind? [(Explanation) Our particular mill has a knitter to replace all imperfect work; that is, make up mends, transfer drop stitches, misplaits and bad patterns. We consider a fair percentage for knitter replacements around 1.5 to 2 per cent at the inspectors in the grey room.]

Answer (2f) (2g). Assuming that knitting rates are based on perfect work, a percentage of replacement allowance of 1½ to 2 per cent is fair. Under this system such work as will finish as high as seconds or offers the possibility of being reclaimed into First Class after mending should be bundled separate from First Class work and marked "Imperfects" and travel along with the First Class. Throw-outs of a lower class than "Imperfects" may be marked "Thirds" and go to a Thirds inspector for proper classification, either Seconds, Thirds, or Waste. Please understand that Fixer Waste referred to in (2d) is absolute waste and "Thirds" here referred to is anything that has the possibility of being salvaged into a salable hose between Seconds and Waste.

Under this knitter classification of (1) Firsts, (2) Imperfects, (3) Thirds and (4) Fixer Waste: it will be found that from firsts, there will be the 1 to 1½ per cent condemned into lower classes; Imperfects will be classed into Firsts, Seconds and Thirds; Thirds will be salvaged into Seconds, Thirds and Waste, and Fixer Waste plus condemned work waste will represent the total waste. This system furnishes a check as to how much the knitters and incidentally the fixers are interested in the quality of work from their section.

Along these lines it might be interesting to mention that the knitter's interest can be increased and his or her full co-operation obtained if, say beginning at two per cent, or higher if desired, and for each one half or one per cent under this figure a bonus on the total dozen knit each pay period is allowed, and in proportion deductions made for all over the adopted base percentage of imperfect work figure. By handling the knitter pay for only perfect work this way it eliminates the necessity for inspectors going back to knitters for replacements. This is worth considerable at times, for such is the case that inspectors return for replacements for bad work and find not only sizes but patterns changed.

Question (3a). What do you figure a fair percentage of menders made by each looper?

(3b) Do you allow any on the dock, if so, how much; that is, do you allow so many socks or do you allow a dozen to each operation, and what is the rate of dock?

Answer (3a) (3b). Assuming a good looper loose course is provided I am sure that from one to two per cent allowance for looper menders is liberal. With this basis to work from and assuming the rate of compensation is established accordingly, it is a very good plan to have a rate based on menders between one per cent and two per cent for each pay period. On this basis a looper is to receive one cent per dozen, (or any other amount desired) if the menders are kept one per cent or under. From one per cent to two per cent the base rate rules. From two per cent to three per cent menders a dock of one cent per dozen rules, and for each one per cent increase in menders over three per cent the docking rate is one cent per dozen. This tabulates itself as follows:

Let base rate = X cents per dozen.				
Percent menders per dozen	=1 percent or less per doz.	1% to 2%.	2%-3%.	3%-4%
Rates per dozen in cents	X + 1 cent	X	X-1 cent	X-2 cents

This plan furnishes an incentive for quality work and it is to be construed as a fundamental basis for establishing a system of reward for quality workmanship.

Question (4a). What should be the percentage of short lengths or long lengths in finishing? What

(Continued on page 123.)

KNITTING KINKS

Practical Discussions by Cotton's Readers on Various Knitting Subjects

Putting in High Splice and Double Sole.

How to get best results with this attachment when used with sinker reverse plaiting.

EDITOR COTTON:

In a recent issue, "CONTRIBUTOR NO. 6018" asked for a discussion of the methods used in putting double sole and high spliced heel on a B-5 220-needle machine equipped with four-step sinker reverse plaiting attachments. It would be impossible to describe or suggest a cure-all for plaiting and reverse plaiting troubles as this particular problem is too big for any one person to know everything about, however, I will attempt to discuss those things which in my experience I have found to be important.

Forward hook needles are best, but various makes of machines and attachments, also different kinds of goods, make it necessary to use central hook or back hook needles. Regardless of what kind of needles are used they should be kept as nearly perfectly straight and in perfect circle as possible. Sinkers in good condition, sinker cams of the proper shape, free from "nicks" and properly set, are also very important. Stitch cams and end cams must be in first-class condition as they control the needles while the stitches are being formed. Stitch cams, end cams and sinker cams really bear the brunt of knitting, and in many cases do not get the attention they deserve.

Proper separation of the yarns as they pass over the throat plate and are drawn down by the needles, and correct yarn tension, must also be kept in mind. In plain plaiting, for example, a rayon over cotton or silk over rayon, the face and back yarns may vary considerably as to size and give good results. In reverse plaiting, however, they should be much nearer the same size or weight, as one must completely cover the other in different parts of the hose, and the design should stand out clearly.

On Scott & Williams and Standard machines, the first finger on the left side facing the machine is the proper place for the splice and sole yarn. (Same location on several models of Banner machines). This has been a universal location for this yarn with most circular machine builders except in a few cases ever since splice attachments were developed for circular machines. The next or second finger should be used for the back yarn where two yarns are used in the leg and foot. Number 3 or 4 can be used for heel and toe yarns and Number 5 or 6 for the face yarn. The sketch in Fig. 1 shows how the various yarns lie on the throat plate and how they are separated by using this finger layout.

Very little separation is required between the splice and back yarns; 1/32-inch would be sufficient, but considerably more is usually needed between the back and face yarns. In some cases, longer or shorter yarn fingers can be used to good advantage in keeping the yarns separated, but as a general rule the fingers furnished by the machine builders for the respective places will be found best.

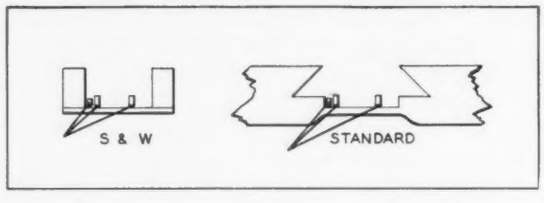

Fig. 1.

The throat plate should be set as far forward as possible so as to run the yarns high in the needle hooks. This will add to good plaiting and avoid various other troubles.

Very little or no tension should be used on the splice and sole yarns. For plain plaiting, the face yarn requires the tension, back yarn very little or none, depending on the kind of yarns used. A light tension on the back yarns, if rayon is used, will give better delivery and better results on plain plaiting. For reverse plaiting, the face yarn may require less tension than the back yarn, depending on which fin-

◆ ◆

WE invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All acceptable contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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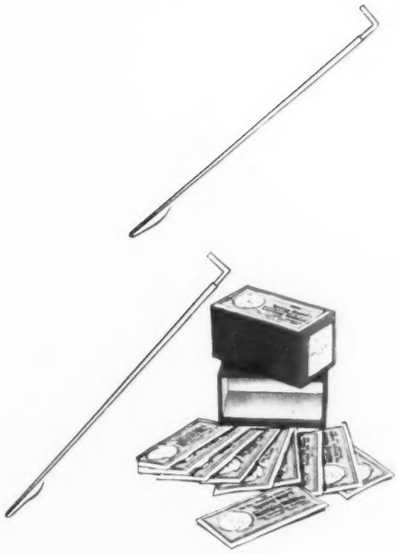
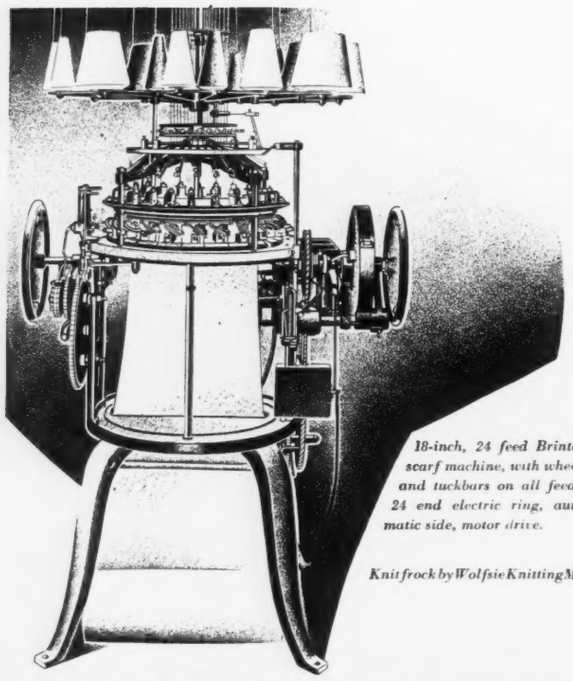


TORRINGTON *SPRING BEARD* NEEDLES



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ger is being used and the kinds of yarns, also whether a needle reverse or a sinker reverse plaiting attachment is used.

Both face and back yarn must cover the splice and sole yarn not only in the plain part, but especially where the designs are in the splice portion, in order to make the design stand out clearly, therefore the old method of finger arrangement should hold good. When using No. 2 or No. 3 finger for the splice yarn, it usually throws it in between the other two yarns when it should be completely on the inside, and this will cause the designs to show up poorly. If, for example, the construction calls for 3-thread silk plaited over 150 denier rayon and 80s/1 mercerized splice—if No. 1 finger were used for the rayon, No. 2 for the splice and No. 5 for the three-thread face, the plaiting would be good in the leg but not in the splice and sole because the three-thread would not cover the 80s/1 as well as both rayon and silk would. If this is sound reasoning, it should apply to reverse plaiting as well as plain plaiting.

Mercerized yarns give best results where a cotton splice is desired. The size should be in proportion to the other yarns used, the heavier the harder to plait over, 70s/1 and 80s/1 being most generally used.

Practically all circular machines have what is commonly called a sole slackening device. This device is of great help toward good plaiting in the splice and sole if properly adjusted. This adjustment is especially important on Scott & Williams machines and should be in proper relation to the left sinker cam. It should not be gotten by adjusting the bumper screw but rather by grinding and setting the slackening cam itself after the sinker cam has been set.

No doubt many of your good readers will find a lot of "old stuff" in this contribution. However, it may help to throw a little "new light" on some old and at times difficult problems.

CONTRIBUTOR No. 6048.

Sleaziness in Full-Fashioned Silk Hosiery.

Here is a very interesting discussion as to how the different departments may aid in overcoming sleaziness.

EDITOR COTTON:

One of the most difficult problems confronting the hosiery manufacturers is that of overcoming sleaziness in the stocking. This is a condition that is found in all mills at some time or other.

There have been a great many reasons advanced as to the real cause of this condition, but as yet the writer has never heard of a 100 per cent preventive. This sleazy condition in the knitted stocking seems to be more acute in warm weather. It sometimes disappears in a mill over-night. However, it is a serious problem and keeps the mills in a state of quandary as long as it appears. In the writer's opinion, this is purely a silk condition.

There are quite a few products for sale by different chemical concerns to be used in the dyehouse for treatment of sleaziness. Some claim that their product will absolutely do away with sleaziness. After careful investigation, I have found most of these claims to be greatly exaggerated. Some of this sleazy condition can be improved in tre dyehouse, but so far I have never seen pronounced sleaziness entirely eliminated by treatment in the dyehouse.

When a mill is having trouble with sleaziness, all departments should get together in trying to overcome this condition, as they each have a part to play in improving the appearance of this hosiery. First the mill should have 100 per cent co-operation between the one in charge of the knitting room and the dyer. With these two departments working together, a great deal can be accomplished towards improving any sleazy condition. The first step in the right direction is to have the hosiery knit somewhat tighter, as this will prove a big help to the dyer. There are many things that can happen to a lot of goods after they leave the grey room. The sleazy condition of a lot of silk can very easily be accentuated by careless handling in the dyehouse. For instance, if a bath containing a sleazy lot is boiled excessively, this sleazy condition is greatly amplified.

Sleazy hosiery should be boiled off and dyed in the least possible time. The writer has obtained best results on sleazy hosiery by using the one-bath method. The goods should never be put into the machine until the bath is stuffed with boil-off oil. After the goods are run about five minutes dye should be added. Sleazy hosiery should never be loaded into the dyeing machine until the bath is at or near the boil, and after the machine has been stuffed with boil-off oil. There is a contraction that takes place in the hose when goods are handled in this manner that serves to improve sleaziness. I have obtained best results on sleazy hosiery by keeping the temperature of the bath at from 205 to 207 degrees Fahrenheit. When the bath is kept at boiling (212 degrees) it seems that the added steam pressure tends to increase sleaziness.

After sleazed goods are boiled off and dyed to shade, they should be given two cold rinses, after which they are finished in a bath containing from 2 to 4 per cent of a good vegetable gum finish. Acid may be added to the bath to enhance the handle of the hosiery. After about 10 minutes in this bath they should be taken out of the machine and hydro-extracted. Hosiery of a sleazy character should be sent to the finishing room in a much wetter condition than the ordinary lots.

The next step is where a third department may do its bit toward improving the condition of sleazy hose. The one in charge of the finishing department should know of the sleaziness. The goods should be taken from the dye nets as promptly as possible and laid out on a table as this will eliminate the possibility of crease marks. Marks of this character seem to accentuate the sleazy appearance of the lot regardless of how slight the sleaziness might be. Boarders should exercise more care than usual when boarding sleazy hosiery.

I believe that anyone trying the suggestions I have offered will find them to greatly enhance the chances of making the goods passable by removing much of the sleazy appearance.

CONTRIBUTOR No. 5069.

Reading Announces

the **Oscillating Take-up Reel**

for full-fashioned knitting machines

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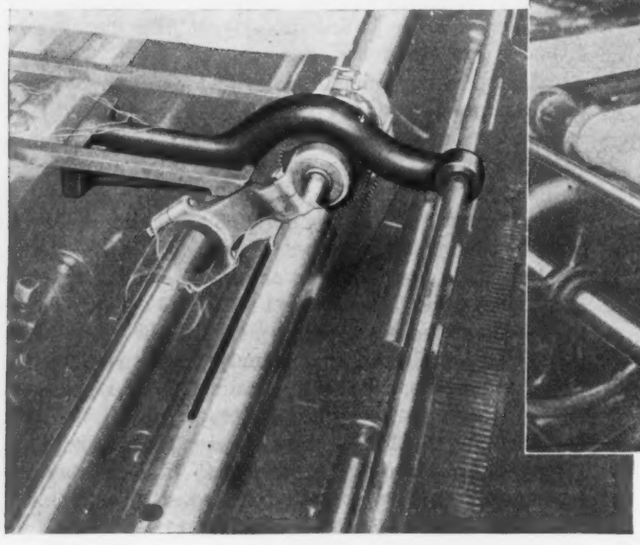

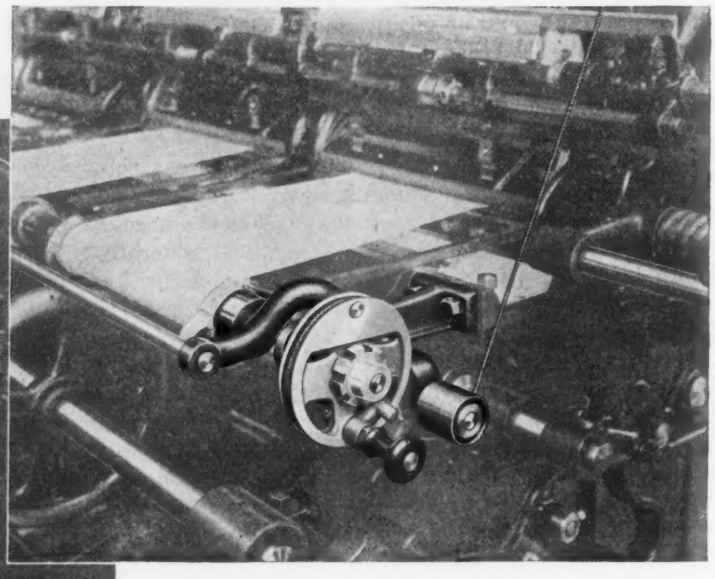

EVER on the lookout for improvements which will give Reading Machine owners the advantage, our engineers have now perfected a device which marks a big advancement in the production of truly uniform fabric.

Note in the illustrations that, through a rack-and-pinion connection from presser shaft to draw-off shaft, the take-up reels are made to follow the oscillating movement of the needles. With this synchronized motion there is *no stretching of loops* when the needles are forced against the presser edge, nor any excess pull on the fabric when the loops are momentarily held by the knockover bits—a perfectly horizontal weft line is the result.

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Complete details and prices upon request.

TEXTILE MACHINE WORKS
READING, PENNA.

Recommends Making Combination Job of Inspection and Pairing Half-hose.

Says co-operation between knitter, dyer and finisher is essential to smooth-running mill operation.

EDITOR COTTON:

I note the request of "CONTRIBUTOR No. 6003" in the December number of COTTON for information concerning the advisability of combining the operations of inspection and pairing of man's 220-needle fancy half-hose, as against doing each operation separately. He also asks for any other information that will contribute to the smooth running of his finishing department.

With reference to the inspection and pairing, I have tried both plans, and after long experience in mills with productions varying from 500 to 5,000 dozen per day, will say that the plan of combining the two operations is more economical and much more satisfactory in every way. Theoretically, it would not appear that either job would be as thoroughly done in this manner, whereas in reality we find that it is. Since the girl must handle the goods anyway, she can do the two operations almost as quickly as she could do one, and after proper training and experience, just as well. I would like to state right here, parenthetically, that it is my opinion that these two operations are the most important ones in the finishing, or possibly in the manufacture of hosiery, and in a large number of mills are the most poorly paid.

If a man will change his method as indicated, I think that within a short time he will find that his girls can inspect and pair practically as many dozens per day as they have been inspecting or pairing only, thereby earning more pay for themselves and at the same time saving money for the mill. The rate of $1.25 a day which he mentions for this work is about right for this class of merchandise. However, I know of several mills making 176- and 200-needle fancies that pay $1.00 a hundred dozen for this operation.

An average girl, after a few months of experience, should inspect and pair from 250 to 300 dozen per day—depending on how well the stock is made as to sizes, lengths, etc.

Regarding the grading of finished goods, this is a matter that requires considerable experience and good judgment to avoid loss to the mill by throwing out goods for seconds that are really not such, or, on the other hand, putting goods in first grade that should be graded as seconds, thereby giving customers grounds for complaints.

This contributor asks for information concerning the different grades of hosiery usually put up by other mills. Most mills have three and sometimes four grades: First Grade, Seconds, and Thirds, and sometimes Fourths. Some mills have two grades of seconds: first and second grades.

Since there are many different defects possible in men's fancy half-hose, as well as in other types of hosiery, it is wellnigh impossible to convey in print an intelligent description of these grades. It is something that must be acquired by experience.

As to other information that might help to operate a finishing department smoothly and efficiently, in my opinion the most important thing is close co-operation between the knitting and dyeing and finishing departments. The goods, first of all, must be properly made, in the correct sizes, backgrounds, etc., to fit the orders—and then properly dyed and boarded, before the finishing room gets them. The man in charge of the finishing department should keep a perpetual inventory of stock and orders and furnish the knitting department with a detailed list of goods needed to fill orders, and also instruct the dyer as to the colors, etc., in which the goods should be dyed.

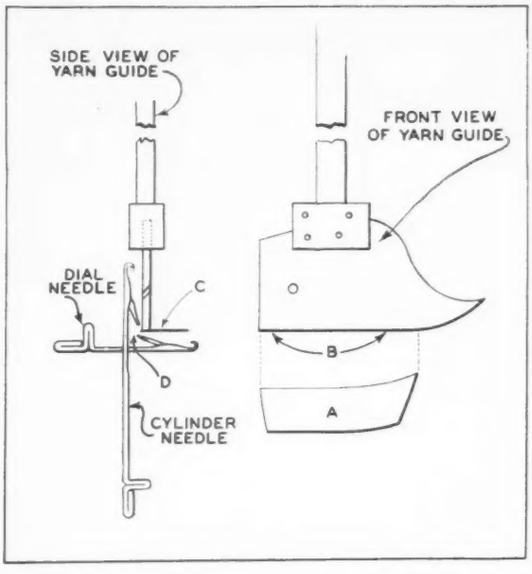
CONTRIBUTOR No. 6044.

Preventing Drop Stitches on the Dial Needles on Ribber Machines.

EDITOR COTTON:

On Wildman and Brinton ribbers a frequent trouble is the latches of the dial needles closing, causing drop stitches down the leg and welt of the rib.

One of the causes of this trouble is the latch closing on the dial needles passing under the yarn guide during the regular course of knitting. This is due to the fact that the end of the latch *D* (see illustration) is too close to the front edge of the yarn guide, and the speed of the machine has a tendency

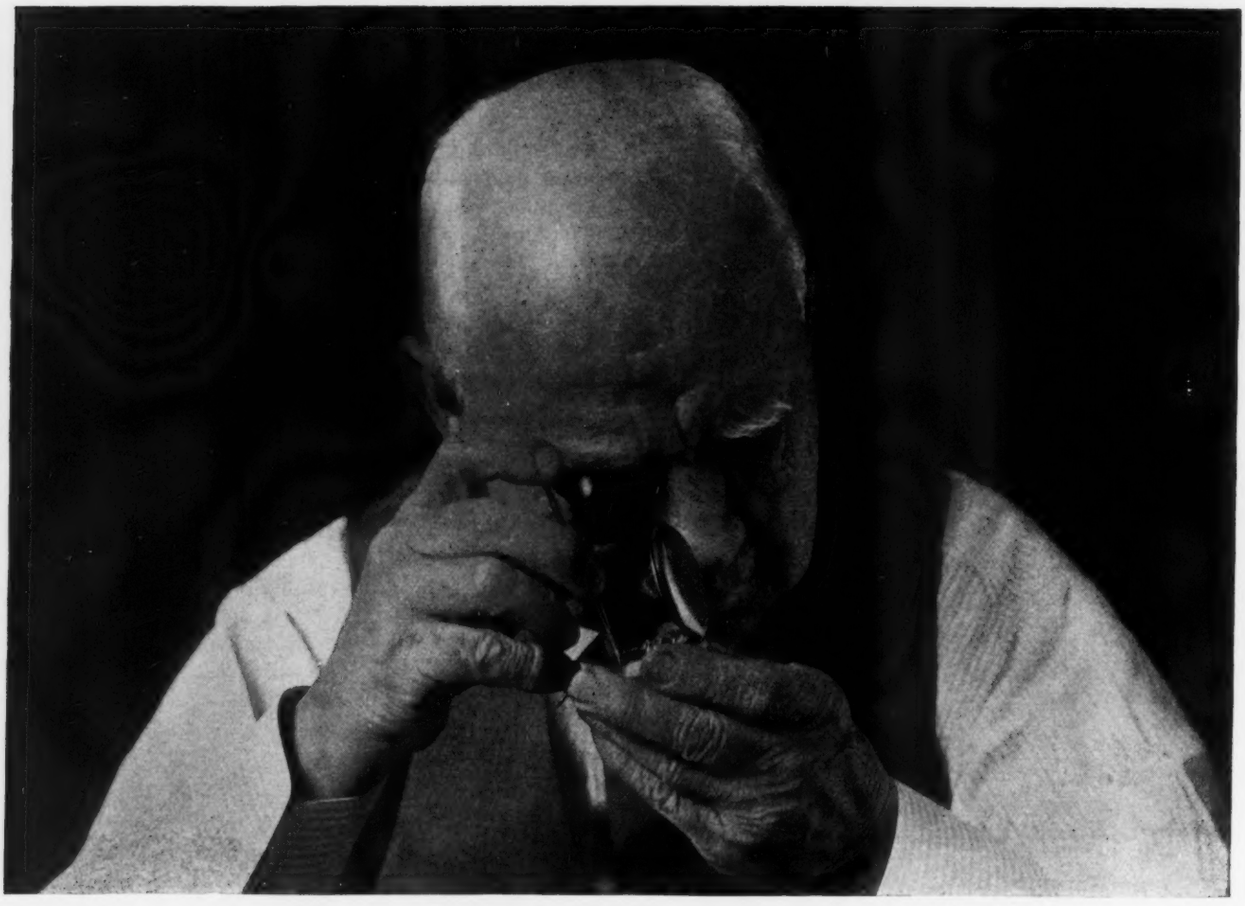


to bring these latches out occasionally beyond the front of the yarn guide, resulting in a closed latch and a drop stitch.

To remedy this condition, you will note in the illustration at *A*, that I have cut out a piece of hacksaw blade to fit the outside curve of the yarn guide at *B*. By inserting this piece to the yarn guide, you will note by the side view of the yarn guide at *C*, how this inserted piece prevents these latches from closing at this point.

There are of course other causes of drop stitches, but this one cause is a little "kink" that may come in handy some time.

CONTRIBUTOR No. 6025.



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A watch maker would quickly learn to be a good needle maker at Royersford. His trained eye and experienced hands would adapt themselves naturally to the delicate, precise workmanship that makes a perfect springbeard needle. Explain to him what an important part needles play in the production of fine fabric and he would give them the same painstaking care as he gives the jewels of a fine time-piece.

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A Study of the Survey on Full-Fashioned Stocks.

SEVERAL explanations may be found for an indicated decline in full-fashioned hosiery mills' stocks, finished and in the gray, from June 30 last year to January 1 this year, as reported in the survey by the research department of the University of Pennsylvania conducted by Dr. George W. Taylor. The report states that mills operating a major portion of the producing equipment contributed to the information to January 26. This, however, leaves the inference that the statistics may be not conclusive as evidence of the condition of stocks and the character of the excess. Yet it is important to know that the reporting mills reduced aggregate stocks to 2,272,341 dozens January 1 from 2,588,880 dozens on June 30. Assuming the statistics are representative in result of what would be shown were all mills reporting, much progress has been made in the direction of effecting a better balance as between production and shipments to distributors—wholesalers and retailers.

It doubtless is true that a considerable part of the decline in stocks can be ascribed to the fact that certain mills in the hands of creditors or in process of liquidation were not in operation during more than a very small part of the period covered by the survey—idle because lacking the means for keeping them active, and not as a voluntary means of contributing to the process of cutting output to more nearly fit demand. Some of the equipment may have been scrapped, but not much of it. While the Schletter & Zander mill in Philadelphia was liquidated after protracted plant idleness, the machinery is in operation elsewhere, a large part of it in the southern field. The Henry Brown & Sons Co. plant of 63 machines in Philadelphia was not in production to any material extent during the last half of 1931. It was taken over by the Lincoln Hosiery Corp. in December and started producing in January. Mills which were idle because their owners said they could not sell the product at a profit are, most of them, now in operation, some of them finding means for reducing operating cost and reducing their prices to the trade accordingly.

It is interesting to note that while the Taylor survey for the last half of 1931 indicates a decline of around 12½ per cent in stocks of full-fashioned hosiery at mills, the figures of the Department of Commerce for December, covering the twelve months of 1931 and supplied by 367 identical mills in all classes of hosiery, indicate a stock decline for the year of from the previous December of also about 12½ per cent, again pointing to progress toward the balancing of production and consumption, particularly as such a trend is indicated for the past two years. More important, perhaps, is the showing of the ratio of stocks to shipments, declining to around 150 per cent to the end of 1931 from over 300 per cent about the middle of 1930.

A particularly interesting study of the figures in the Taylor survey is afforded in a chart pertaining to ratios of unfilled orders to stocks; of stocks to productive capacity and of the November ratio of production to capacity, revealing a considerable variance by gauges. The table follows:

Gauge	January 1, 1932		November, 1931
	Ratio of Unfilled Orders to Stock	Ratio of Stock to Productive Capacity	Ratio of Production to Capacity
36 and under	0.8	*	28.8
39	52.1	94.1	73.6
42	33.4	122.4	80.4
45	15.7	119.2	71.0
48	20.1	167.2	70.1
51	28.5	133.2	97.1
Total	28.9	120.4	76.0

*Insufficient data.

It will be noted that, for all gauges, the ratio of unfilled orders to stock on January 1 was but 28.9 per cent, while the ratio of stock to productive capacity was 120.4 per cent for all gauges and the November ratio of production to capacity was 76 per cent, or about three-fourths of capacity output.

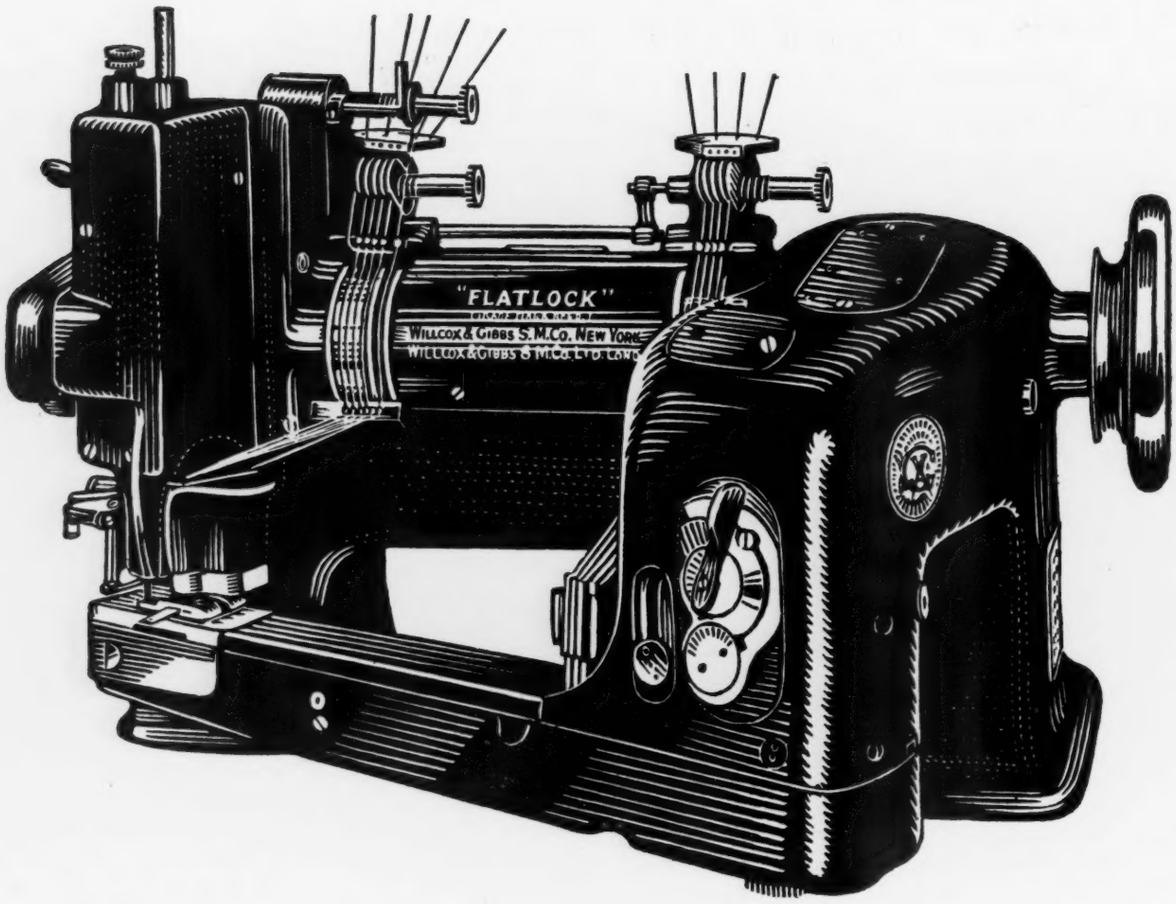
Much has been heard in the past year or two of a definite trend to finer gauge. In the foregoing chart, it will be noted, the better showing as to unfilled orders is made by 39-gauge, which in the coarser gauge group stands in first place also in ratio of stock to productive capacity, and in a favorable position as to ratio of production to capacity.

In the popular gauge group, stocks of 42-gauge appear in the greatest per cent of capacity production, while in ratio of unfilled orders to stock, 45-gauge, regarded by many in the trade as coming to the fore, is at the tail end of the line, with 15.7 per cent, compared with 52.1 per cent for 39-gauge and 33.4 for 42-gauge. Although 48-gauge descended to the dollar a pair bracket, only 20.1 per cent of the stock was represented in unfilled orders, with stocks standing at 167.2 per cent of productive capacity.

It seems indicated by the chart that 51-gauge had not, to the end of last year, been going into distribution in step with the general proposal that the trend is to finer gauge. This would seem to be contradicted, however, in a table prepared by Dr. Taylor disclosing changes in stocks by gauge appearing between June 30 and January 1, for in these statistics 51-gauge gained 142 per cent in unfilled orders and productive capacity increased 139.8 per cent.

That manufacturers are heading toward finer gauge output is indicated in a 139.8 per cent gain in productive capacity of 51-gauge, comparing with a decline of 10.4 per cent for 39- and a gain of only 1½ per cent for 42-gauge. From June 30 to November, 1931, production of 51-gauge increased by almost 309 per cent, which compares with 12.9 per cent for all gauges in the aggregate. It will be noted that standing second in this respect, 39-gauge output was increased by 20.5 per cent. It is pointed out by the statistician that production of 51-gauge stockings amounted to but six-tenths of one per cent of the total for all gauges.

The introduction of net and lace hosiery and lace welt numbers may account for a part of the decline in production of hosiery as a whole in the last half of last year. The report of Dr. Taylor does not



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classify lace construction but has the following as to mesh and lace-welt:

Mesh and Lace-Welt Hosiery.

"Despite the apparently large supply of mesh hosiery on hand the reporting concerns showed a relatively small production and stock of this type of hosiery. For November, 1931, mesh production was 17 per cent below the June output, while January 1, 1932, unfilled orders for mesh were 42.8 per cent under the June 30, 1931 orders on hand. A comparison of stock of mesh hosiery on the same two dates reveals an increase in stock of 41.5 per cent. According to the reports received as of January 1, 1932, both production and stocks of mesh hosiery are concentrated very largely in the 42- and 45-gauge lines of goods. These two gauges account for over 90 per cent of the mesh production in November, 1931, and for almost 87 per cent of the stock of mesh on hand on January 1, 1932.

"The production of lace-welt hosiery during November, 1931, was concentrated in 45-gauge hosiery to the extent of 59 per cent of total lace-welt production while 28.5 per cent was of 42-gauge. However, of the total November production, not more than 7 per cent of the hosiery produced had the lace top."

[Editor's Note]—It seems significant in a study of the matter of gauge that 90 per cent of the production of mesh hosiery in November was of 42- and 45-gauge, while both of these gauges were in a less favorable position on January 1 as to ratio of unfilled orders to stock and ratio of stock to productive capacity.

Comparison of December 1931 and 1932 Reports.

Analysis of the statistics tabulated by the Department of Commerce covering the reports of 367 identical hosiery mills for December last year and the corresponding month of 1930 indicates that women's full-fashioned hosiery improved its position in matter of production in relation to stocks more than either of three other groups.

Women's seamless stocks in December last were reported 27 per cent heavier than in the previous December, while unfilled orders fell off 39 per cent. Men's seamless fell back 29 per cent in unfilled orders but gained only four per cent in stocks. Only a slight gain was made in production of infants' socks —about 14,000 dozens—while unfilled orders showed an increase of 38,000 dozens and stocks declined to 772,701 dozens from 966,357.

Exports of cotton hosiery in December, the latest month for which statistics were available for this issue of COTTON, showed an increase in cottons over November of around 7000 dozens, the gain being divided between women's and children's. After dropping to a low of 851 dozens in November, women's seamless silk went to foreign markets in December for a total of 3000 dozens. Exports of women's silk full-fashioned declined in December by 3500 dozens from November, for a total of 14,416 dozens. Exports of rayon stockings, all classes, declined by approximately 2000 dozens.

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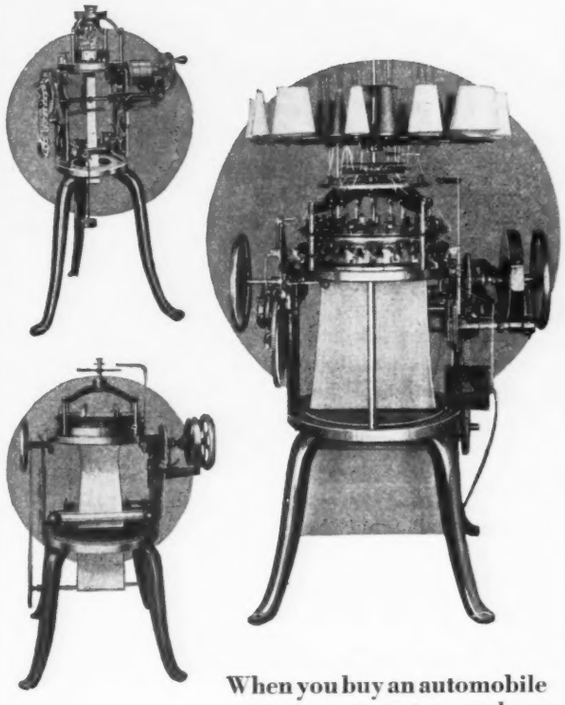

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The YARN MARKET

Philadelphia, Pa., February 16th, 1932

DEMAND for cotton yarns has been not sufficient to give prices proper support. Lack of new business and unwillingness of manufacturers to anticipate requirements through the spring months presented a combination against which sellers could not successfully rally during the weeks when, it had been expected, there would be recovery from the quiet that almost invariably follows the year-end holidays. There were times when deliveries against existing contracts were regarded fair. But some of those who had been withholding delivery details for many months were taking yarns on a compromise basis—a per cent at former prices and a greater per cent at current prices. Shipments therefore showed little of an encouraging nature. The hopes of dealers were bolstered from day to day by the firmness with which raw cotton ruled, and there seemed to be indicated a buoyancy of spirit that was interpreted by those on the side lines as meaning the trade was in receipt of encouraging news from spinners.

Dealers have been saying from time to time that spinners were gradually drawing a tighter rein on prices, in contemplation of more severe curtailment of output than has yet been practiced. As there were no developments along this line to the middle of February and buyers for manufacturers were hinting at expected recessions, the trade became less sanguine of being able to maintain the then current prices unless supported by a rise in cotton. Some houses appeared to feel that spinners of sales yarns were not giving distributors the support which, it was said, had been promised by innuendo.

Conflicting statements in the matter of yarn contracts make it difficult to accurately gauge trade sentiment on this moot question. There were reports of dealer satisfaction with the policy of producers in refusing to enter into contracts for deliveries more than a month to six weeks ahead, as this was viewed as probably putting it up to buyers to make the next move. A few contracts were executed around the turn from January to February. These were said to be of the blanket order of commitment for carded, combed and mercerized, specifications to be filled within reasonable time. Conservative shipments continued, but no additional contracting was reported, and more recently there has been complaint of a cessation in commitments for future consumption.

Yarn buyers profess to believe that cotton prices have been maintained by artificial means and that, having failed to promote sales of yarns, cannot much longer be prevented from slipping. With such a feeling prevailing in some quarters, and some manufacturers buying for less than the market, the holding up of deliveries, in only a few instances reported, had a weakening effect.

Single carded was easily available at 13 cents for 10s of good average grade. Sales were made at 12½, and the bulk of the business in the coarser counts was said to be on that basis, with counts above 20s offered relatively lower. No attempt to maintain the arbitrary differential seemed to be made.

The table of prices for the entire range of yarns, carded and combed, show virtually no change from a month ago. Thus, it may be pointed out, market values have been on a comparatively stable basis. Seldom has there been so little fluctuation in so long a period. There were lower inside quotations on warps, and apparently less steadiness in weaving numbers than in the knitting group.

New business in mercerized yarns has been in very light volume, with the result combed peeler yarns appear somewhat softer, although quotable on the level of a month ago.

Combed peeler singles were given a short boost in volume of sales early in February, when there was some buying for light weight underwear.

Philadelphia prices quoted February 16th follow:

Single Skeins.

12s	13	14s	13½
16s	14	20s	15
24s	17	26s	18
30s	19		
26s	18	30s	19

Single Warps.

10s	13	12s	13½
14s	14	16s	14½
20s	15	26s	18
30s	19		

Two-Ply Skeins.

8s	12½	10s	13
12s	13½	14s	14
16s	14½	20s	15½
24s	17	26s	18
30s	19	40s	26

Two-Ply Warps.

10s	13½	12s	14
14s	14½	16s	15
20s	15½	24s	17
26s	18	30..s	19
40s	26		

Frame Spun Carded Yarn on Cones.

8s	12½	10s	13
12s	13½	14s	14
16s	14½	18s	14½
20s	15	22s	16
24s	17	26s	18
30s	19	40s	26
30s dbl. carded			21
30s tying in			48

Carpet Yarns.

8s and 9s white warp twist	13
8s tinged tubes	12½
8s part waste	11

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	22		20s	23	@24
24s	25	@26	30s	28	@29
40s	31	@32	50s	35	
60s	39		70s	49	@50
80s	58	@61			

Single Combed Peeler Yarns on Cones.

18s	20	@21	24s	22½	@23
30s	25	@26	36s	27½	@28
38s	28½	@29	40s	29	@30
50s	34	@35	60s	38	@39
70s	49	@50	80s	58	@61

Mule Spun Carded Yarn on Cones.

10s	19	12s	19½
14s	20	16s	20½
18s	21	20s	21½
24s	24	28s	25
30s	26	40s	34

Mule Spun Combed Peeler Yarn on Cones.

10s	24	12s	25
14s	26	16s	27
18s	28	20s	30
22s	31	26s	32
28s	33	30s	34
36s	37	38s	39
40s	40		

Tinged Insulating Yarns.

8s	12	8s–2	12
12s–1	12½	12s–2	12½
10s–1	13	10s–2	13
		20s–2	15

Suggested Adaptations of
Tuck-Stitch Construction

Sweaters
Crib Blankets
Beach Suits
Beach Robes
Sweat Shirts
Shoe Bags
Golf Suits
Sun Suits
Sport Dresses
Face Cloths
Towels
Laundry Bags

TUCK-STITCH Underwear of DIXIE Durene!

The Dixie Mercerizing Company, after a careful survey of tuck-stitch knitting requirements, offers you Dixie durene especially prepared for tuck-stitch construction. This Dixie durene yarn is soft, pliable and smooth-running—ideally suited to the intricate tuck-stitch attachment—supplied natural or gassed, thoroughly bleached to a pure white, or dyed in bright pastel shades. We can furnish samples in sets of any required number of cones, and make shipment from stock.

When you investigate tuck-stitch for your line, when you are deciding on yarn, remember: Dixie will gladly send you samples. Just wire or write . . . . . .

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TUCK-STITCH
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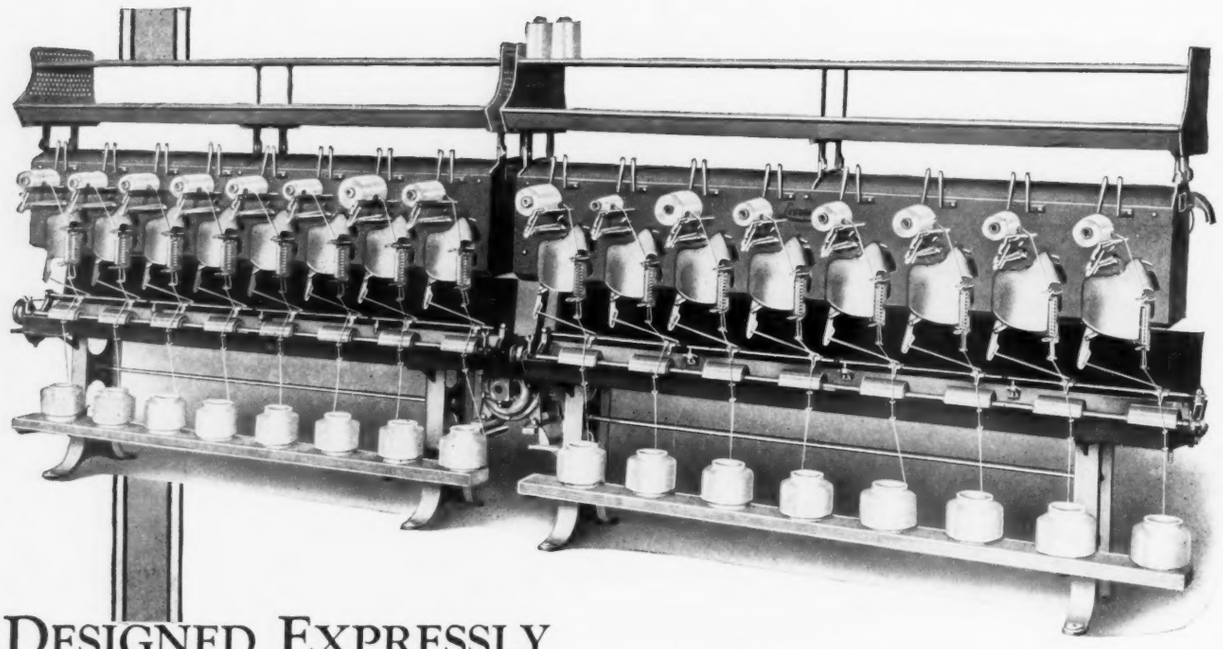

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High spindle speeds add materially to spindle output. Convenience and simplicity of operation assure high operative efficiency. A new, positive, sensitive control for the tension and pressure devices creates new standards for the quality of winding now possible in the coning of your yarns.

Our new booklet "Better Cones for Fabrics of Quality" describes this equipment in detail. A copy will be mailed to you upon request.

UNIVERSAL WINDING COMPANY
BOSTON

329

UNIVERSAL WINDERS

The KNIT GOODS MARKETS

CONSUMER approval of silk hosiery at the lowest prices for all time has received strong encouragement since the beginning of February from the buyers for some of the larger and better known department stores and women's shops. Offerings of the better types included three pairs of three-thread silk full-fashioned ingrain with picot, of course, for $3.50, which was less than women had been accustomed a short time ago to pay for two pairs. Especially were there sacrificial offerings of 45-gauge stockings, for all-over silk chiffon, picot and reinforced top and sole, for 85 cents and sheer open mesh with fancy welt, for 95. Full-fashioned medium service weight at 65 cents appeared on the counters of one or two big stores surrounded by good hose at a dollar a pair and up to lofty figures for very fine gauge in gauzy construction for one evening's wear.

Although it has been and still is maintained in the trade that women have been surfeited with cheap hosiery, such a conclusion could not be reached from the attitude of buyers for the trade toward quotations, although many are, professedly, sticklers for better and higher priced goods. Many of the manufacturers have broken away from their standards for accommodating these buyers as to price. Few have improved quality at a higher cost to the buyers.

A leading Philadelphia store last month ran a sale of silk-to-top chiffons and cotton-top and sole service weight, both numbers 39-gauge, at 50 cents a pair, which was the lowest price ever for women's silk stockings in any Philadelphia store at first floor counters. It is stated unofficially that 12,000 pairs were sold in the one day of the sale. Less than a week later the Frank & Seeder store ran a sale of similar stockings for 49 cents a pair. Subsequently a wholesale distributor was offering a lot of 2,000 dozens of silk-to-top 39-gauge, finished, for $4.50. It was considered somewhat significant that so soon after the special sales by the two stores, 39-gauge stockings were being offered for $4.50, which is a half dollar a dozen more than most buyers will pay for stockings to be sold for 50 cents a pair.

It might appear that 50-cent silk full-fashioned stockings have about run the gamut of their popularity, and it may be that a turn toward higher standards is to be witnessed. A manufacturer whose plant had been idle because, the management said, the product could not be sold profitably in competition with price goods, late in January resumed operations under conditions by which operating cost was materially reduced. The mill lowered the price of 45-gauge stockings 50 cents a dozen, sold the production for February and soon was advertising for seamers. In the meantime the same establishment, operating a seamless plant, had become quite busy with women's 300-needle silk hose.

A direct-to-retailer mill in North Philadelphia is and for some weeks has been operating to capacity with two shifts and is adding auxiliary equipment. The bulk of the output is of hosiery for 89 cents a pair and lower. A nearby mill, a branch of a large Massachusetts corporation, is employing two shifts in the production of trade-marked hosiery in the higher price range, sold direct to retailers. The Apex Hosiery Mill, the largest full-fashioned establishment in Philadelphia, has been in full-time production for some weeks.

Conditions in the mills here referred to, each representative in its class, seem typical of approximately what is the situation as to many plants in the Philadelphia and Reading area, indicating a material improvement in the full-fashioned group since the beginning of the year. Some of the smaller mills, it is true, being not well hooked up for marketing their output, are doing commission knitting for certain of the larger plants which maintain profitable merchandising relations in the principal markets. This helps the small fry out of a hole, some of the group needing assistance in financing silk purchases. On the other hand, some few of the large northern mills have substantial orders from some of the leading jobbers, and contracts to supply numbers of mills selling the retail trade.

Trading in hosiery is showing up better in volume of business, but volume in many cases means very thin profits. With those looking to a more nearly rational marketing policy, it is held, the question among mills should not be, "are you busy?" but "are you making any money?"

Hosiery department managers are drawing the line more sharply in the matter of guarantees and acceptance of returns. A house guaranteeing for three months 12-thread silk stockings against runs and broken stitches is regarded within the lines of safety, leaving out of consideration the honesty of persons claiming a refund under the guarantee.

Hardly any store is guaranteeing silk hosiery of any construction and some are accepting no returns of very fine gauge two-thread silks with sandal feet. The department heads advise against the use of hosiery so flimsy, but women will buy it, for an evening's wear. Buyers say that if stores maintain the stand against accepting returns of the gossamer-like stockings, mills soon will call a halt on production of one- and two-thread hose.

A Philadelphia store which had a pair of 69-cent stockings returned because "holes wore in the soles in one evening's wear," handed the woman in the case a perfect pair with the understanding she submit the damaged pair to the local textile school for an expert's judgment. The expert decided in favor of the stockings, relieving the mill and store of blame for the damage. The woman, true to her promise to the store, went back and paid for the second pair of stockings. She had put in an evening's

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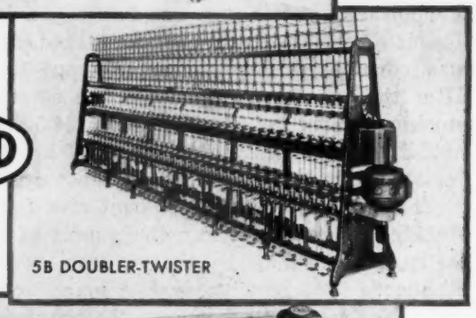

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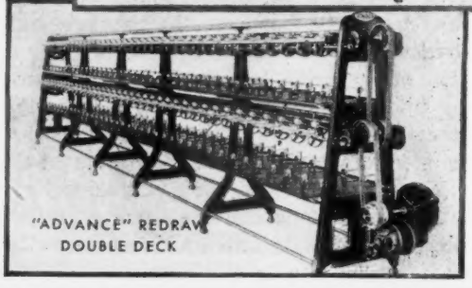

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DOUBLE DECK

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Sales Offices: New York, N. Y., Wilkes Barre, Pa., Stonington, Conn., Charlotte, N.C., Los Angeles, Calif.

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2280

dancing in the first pair while wearing shoes that were a size too large. "If all women were like this one we would not hesitate to sell our dollar hosiery under a guarantee," said the store manager.

It appeared in February that mesh stockings are not causing the furore that was indicated in last year's popularity. The fish seine mesh is declared to be giving way to needle point mesh, full-fashioned, designed to be sold in retail stores for a dollar a pair. A wholesaler had a place some weeks ago for 4,000 dozens in the gray. Prices for full-fashioned mesh are said to have weakened under offerings of the cut-and-sewn, otherwise described as tailored. Some of the better stores display the tailored mesh with fashioned foot in only their basement departments. The cut leg on full-fashioned foot is reported in increasing call for price stores, in lace as well as net, and, it is said, flippantly, but perhaps not wide of the truth, that "business in cheap lace window-curtains has picked up since the manufacture of lace hosiery got under way."

Snappy demand for mesh hosiery not unlike that of two years ago for bare-leg stockings is foreseen by some observers of style, human nature and whims of woman. A warp-knit mesh stocking with no heel or toe re-inforcement which came on the market this year may be taken up by the element sponsoring the bare-leg vogue, which had a fitful run of one season and missed connections when offered for the following season.

Wearers of the no-seam and no re-inforcement for the toe would have a pretext for appearing in painted toenails, it is suggested, which would serve a good purpose for beauty parlors, since the fad was introduced at southern winter bathing beaches.

Like two-thread 48- and 51-gauge regularly knit stockings with no toe reinforcement, this type of mesh is designed to be worn with the new spring shoes or what remains—sandals. The regular knit of one or two threads of silk in 48- or 51-gauge construction is frowned upon by the buyers of stores patronized by fashionables who essay the extreme, for the reason there is a large per cent of returns, which the stores cannot accept, except at their own loss, as the manufacturers will not receive them unless, of course, for mechanical defects.

The preliminary report of the recent survey of the full-fashioned industry for the last half of 1931 contains no mention of either of the freakish styles looking to paint on the toes to harmonize with the colors for the finger-tips.

An effort was made by a few manufacturers, anent the scare over patents and infringement, for knitting a fancy design below the welt instead of in it, as provided in the patent of the Ajax Hosiery Mills. Much as some mills wanted to circumvent the claim on which the patent was issued, they reasoned that the fancy work belonged in the welt, regardless of possible court action. Reports by representative traders of the result of sampling with lace below instead of in the welt seem to indicate that the lace will be an integral part of the welt, and not tacked on at the bottom.

Complaint is heard among manufacturers of types

From Black or Blue . . from any hue . . or tint . . *to* WHITE!

DISCHARGED PRINTS on weighted Silk . . show purest, intense . . brilliant *white*. DISCOLITE as an iron-free product assures spotless clarity of color.

Smoother running than any similar product you have known . . non-scratching . . DISCOLITE is the *safe* and *sure* discharge agent.

Advance Print numbers for Spring show DISCOLITE-processed "effects" by alert printers.

Supplied in Powder or Lump form.

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The dollar you spend *now is worth $1.50*

The dollar you save *now is worth 75c*

A LOT of people feel just now like the old Negro who came to the crossroads and saw one sign pointing to heaven and another sign pointing to hell. He shook his head and said to himself, "Ef Ah goes to Hebben, gotta fly all the while; ef Ah goes to Hell, gotta jump all the while. Ah giss Ah'll jes' set here an' rest mah-se'f."

BUT resting is rusting. This is true of dollars.

IF those of us who *have* money just *leave* it to *rest*—the wheels of industry keep on rusting. Wheat and cotton and corn keep on piling up in warehouses. Our neighbors keep on hunting for jobs that don't exist.

NOW, it's wrong to spend our dollars foolishly, just for the sake of spending. But a lot of us are *saving* dollars foolishly—just for the sake of saving—without realizing that the dollar we save today has a decreased *earning* power compared with the dollar we saved in 1929. But the dollar we *spend* today is worth $1.50 in value received.

MOST prices are way down—further down than they were even in 1921. Eggs and butter and flour and clothing and furniture are way down—and that means values are way *up*. This is the greatest *buying* time we'll see again for many years.

PRETTY soon, these prices are going to start up—some prices have already started up. When they do, we'll have to pay *more* for the things we need *right now*. We shall have lost the chance to get that new suit or dress or chair or bed or radio or automobile—at a bargain!

BESIDES, if we buy these things *now*, we'll put somebody to work who needs a job even worse than he needs charity. If we put him to work, he can buy the things *we* make or sell, and that will help *us*.

HARD times? Not if we harness our dollars and hitch them to the wagon, instead of leaving them in the stable.

THE NATIONAL PUBLISHERS' ASSOCIATION

"To use available income to purchase goods normally needed and in the replacement of which labor is employed, is a condition precedent to any hopeful program to constructively increase employment."

From the Recommendations of the Committee on Unemployment Plans and Suggestions, of the President's Organization on Unemployment Relief.

of full-fashioned hosiery which last year came on the market in a small way as novelties, that already prices have been cut to near the profit saturation point. It seems the managements of one or two mills became so enthusiastic over possibilities for the innovations that they at once went into volume production and made low prices accordingly. Like a number of novelties which were bought cautiously at their first appearance but later became popular sellers, the lines in question have not been moving as fast as had been expected, as numbers of buyers were slow to stock innovations which might by some sort of specious reasoning be declared infringements of some manufacturer's patent. So, the mills which named low prices based on an expectation of volume business, are said to be selling the product at quantity prices while producing and marketing on an unlooked for high-cost basis. It has been found as difficult to advance prices as it was to book volume orders.

Quotations on quantity orders while intending to forget quantity is a practice among certain buyers of "jobs" which seems to have been revived for frequent adaptation. A manufacturer commenting on this abuse, for which mills often "fall," cites a somewhat recent incident, after having had several like experiences.

A "good customer" inquired for "jobs" of odd lots which he might offer at sensationally low prices to his retail trade. "As we were making up around three cases of irregulars and discontinued numbers," says this manufacturer, "we intimated we might have a shipment in a week or two. The jobber perked up and asked for the first chance to buy them. In due course we shipped him samples representing almost four cases of women's hosiery, which we priced attractively for 'all or none'. We heard nothing from our friend the jobber until ten days later, when he sent us an order for 10 dozens, followed a day or so later by an order for 12 dozens. We did not ship either order, and referred the jobber to our letter naming a price per dozen for the lot. He replied that it would not be safe to stock so much hosiery 'in these times', and the order was cancelled. We found he had given our samples to his salesmen and intended to draw against the lot as they made sales, we to act as his banker. Of course the stockings have since been sold, and at a better price than this jobber was to have paid, as we had several customers bidding for them. I am glad to tell manufacturers of this experience," the mill man added.

Varied Assortment of Rich Patterns in Half-Hose Attractively Priced.

MEN'S HALF-HOSE in a rare assortment of rich patterns present a marvel in price. Even mesh numbers, clocked or otherwise ornamented, are available at prices that recall the plain combed peeler yarn stocking of only a few years ago. Rivalry among mills for excelling in construction has put men's socks on a plane where it may be said stylists and mechanical genius have virtually outdone most of the achievements in the designing of women's hosiery.

Low-priced attractive socks for men are going into distribution in enormous volume for spring. The great bulk of the business is in goods for the masses. Some operators in the primary markets say they can sell only about one case of socks for the 50-cent retail price bracket while disposing of six to eight designed to sell for 25 cents and lower, the 15-cent stockings representing a goodly proportion of the sales.

Chain stores are large buyers of right good-looking half-hose which they pass over the counter for 10 cents a pair. One popular line in the five-and-ten is handled also by jobbers, costing them 80 cents a dozen. It is a profitable number for retailers in cities where the chains do not have their better stores. It is obvious that single-unit retailers cannot match the chain price. Nor do they have to, it is stated by distributors to retailers, the business of the latter in the identical sock at two pairs for 25 cents bulking large.

Among the price marvels are boys' anklets, plain and in color combinations, made by mills producing boys' golf hose. Anklets at less than half the price of the full-length golf stockings seem superior in design. It is yet to be established what sort of showing the anklets for boys and misses will make.

Children's half socks and five-eighths length are moving to retailers in fair quantities for spring. It looks as if dealers bank on no call of moment for seven-eighths. Men's half-hose and children's lines are rated by the trade as in a good market position for spring.

Seek Full-Fashioned Hose Stabilization through Patent Pools and Machine Allocation.

OUT of the multiplicity of patents covering designs for hosiery and methods of construction, a few manufacturers and a complement of patent attorneys are trying to concentrate on a few for remedying an over-production situation in women's full-fashioned, through patent pools for restricting license to operate under some of the patents which are regarded a key to the solution of the most difficult problem ever to confront the full-fashioned group.

What is invariably referred to as the Nathan Schwartz patent, for producing a non-run stitch, has stood out for several weeks as the starting point for a regulated output. William Meyer, president of Apex Hosiery Co., Philadelphia, and president also of the National Association of Hosiery and Underwear Manufacturers, has sponsored the plan for utilizing the Schwartz patent, and Lucke & Smith, in the Fidelity-Philadelphia Trust Building, are the attorneys vouching for the validity of the patent. All of which is known generally in the knitting trades through publicity given to the subject in successive weeks beginning in January.

Some few manufacturers of the smaller type as measured by the number of the machines they are operating, have said the stocking cannot be made a commercial success, from the fact that production is slow and the cost therefore would retard sales. It is stated at the Apex offices that the stocking was knitted in the Apex factory some time before it was

given the first line of publicity. Not a great deal was known of it outside of the Apex organization to around the middle of February, when it was promised that the trade would receive complete particulars "in another week or two".

Manufacturers who have entered the patent pool dealing specifically with the Schwartz patent appear quite enthusiastic over its future, and if in this instance enthusiasm counts for anything, the pool will have more applicants for license than can be accommodated, as it is the intention to "sign up" only those who can be depended upon to follow the policies for which the formation of the pool was undertaken.

The first patents to be pooled under the plan described were those of the Van Raalte Company, and a recent report accounted for 21 mills participating. The patents relate chiefly to the production of hosiery on warp and full-fashioned machines, the legs being made on the former and the feet and welts on full-fashioned equipment.

Promoters of the pool plan admit that production of the Schwartz patent non-stitch stocking will be slow, but this is regarded in its favor, as there will be less likelihood of an over-supplied market. It would appear that for the reason skepticism as to the validity of some patents applying to hosiery has influenced buyers to withhold orders, an organization of responsible manufacturers for getting behind valid patents is necessary. It will be recalled that the Ajax Hosiery Mills, owner of a patent for a fancy welt full-fashioned stockings, some weeks ago warned buyers to be careful that they did not lay themselves open to an action at law for violating alleged infringements. While the effect of this warning may have been magnified in the suit which J. C. J. Strahan & Co., Inc., Philadelphia, filed against the Ajax for damages for allegedly preventing sales of Strahan company hosiery, it is a fact that the legal departments of some of the large retail hosiery retailers advised against putting in stock any stocking sold under a patent unless the buyer were assured of immunity from damage suits on the ground of infringement. Although the Strahan suit was withdrawn, after the Ajax patent and warning had been given much publicity, the scare seems to have not entirely disappeared.

Co-incident with the launching of a patent pool designed primarily to make use of and control the Schwartz patent, the trade was disturbed over reports of possible complications growing out of the application of John W. Terrey for a United States patent for cradle sole stockings, for supplementing a patent which he procured in Canada. There was some relief from this scare when Terrey's United States attorney announced that "if evidence that others made and developed cradle sole hosiery prior to the claims of Terrey being filed here, application for the United States patent might be discontinued." A month after this announcement reached the trade nothing more was heard of Terrey's intention as to pushing his United States application. But other patents have been deemed worthy of consideration of the patent pool headed by Mr. Meyer, and at latest accounts the pool was proceeding cautiously while formulating a merchandising program.

Allocation of Machines on Royalty Basis.

Allocation of new equipment under patent control and a royalty plan intended to safeguard the interests of all licensees has been discussed in trade prints in the past few weeks by H. W. Anderson, president of the Fidelity Machine Co., and a number of manufacturers have received an outline of a proposal for installing the Fidelity Multi-Step Bird Eye Mesh machine, Style S-30-P.

Mr. Anderson believes hosiery buyers for the trade are coming to a turn where they will insist upon maintenance of proper standards of construction and co-operation of machine builders and hosiery manufacturers in means for a more nearly stabilized market situation; that buyers will be more inclined to put new styles, at higher prices, in stock if there be assurance the styles will not be pirated and put on the market at ridiculous prices. He therefore suggests installation of new equipment for distinctive types of hosiery, under terms for protecting manufacturer, distributor and consumer, and by stabilization, improving matters from the general economic standpoint. He proposes installation of a given number of the new Fidelity machines, no less than ten in any one mill and a designated maximum number.

When the year's allotment has been contracted for, no more of the machines to be sold or offered for that year. Each mill operating any of the machines would pay a given small license fee adjusted to the retail price of the product. All would pay the same fee per dozen of stockings in a specified price bracket. If a manufacturer desired to make up the stockings for a lower price, the royalty or license fee per dozen would be increased, in accordance with the terms of contract. In other words, by way of encouraging price maintenance and construction standards, the higher the price the lower would be the cost of royalty and in inverse ratio, the lower the price bracket, the higher the royalty cost.

The plan is not strictly new, and has been under consideration as to patents in industries other than hosiery. Had there been allocation and some sort of production control of the RI machines of Scott and Williams, Inc., when it became a rage some few years ago, it is maintained by several seamless manufacturers, RI hosiery would have been a more enduring commercial proposition and losses would have been less.

Men's Heavyweight Underwear Opens Late at Prices Substantially Reduced from 1931.

SUBSTANTIAL reductions from 1931 prices for men's heavy weight cotton underwear were shown at the opening last month for the season of 1932-3. There was a fair attendance of buyers, who seemed especially impressed with the lower rates, and it was believed among sellers that but for the fact sales to retailers had suffered by reason of the mild winter, there would have been some conservative buying for the early delivery period. As it was,

manufacturers appeared encouraged by the presence of more buyers than had been looked for.

Price was the outstanding subject of comment among buyers, reductions of around 10 to 12½ per cent being viewed as representing a very liberal bid of manufacturers for some early business. The one discordant note was a representation of carry-over stocks in the hands of retailers. This was thought to be perhaps exaggerated by jobbers, as, it was pointed out, wholesale distributors had bought so sparingly for winter that they could not have moved any great quantities to dealers, nor could they themselves have more than the usual left-over goods on inventory.

It is expected that this year's low prices for heavies will enable mills to win back some of the business lost this winter to summer weights. It is a common admission that shorts and shirts came into much wider use in the current heavy weight season than in any corresponding period. Will those who in a mild winter adopted shorts and shirts as substituting for medium weight cottons cling to them for all year wear? is a question with which buyers are reckoning. It is conceded another open winter might be a cause for numbers of mills discontinuing the manufacture of heavies. For manufacturers and jobbers it is like planting time in the cotton belt.

It has seemed that the knitted outerwear industry is more over-machined than full-fashioned hosiery. Competition this year has been especially severe, leaving more than one manufacturing organization backed against the wall. The situation presents a perhaps more serious problem by reason of backward business in sweaters for spring. But of late business in this division has shown improvement, and it is not unlikely that the pressure for sweaters will be felt about the time the peak of the bathing suit rush is reached. So, it is pointed out, mills are left to decide between accepting orders of doubtful safety and facing a shortage of stock goods. March and April will be heavy months in knitted outerwear if mills turn out goods needed for meeting belated demand.

Among the Knitting Mills

A TELE-TYPEWRITER SYSTEM, to speed up communication with the New York offices, has been installed at the Wilkes Hosiery Mill, North Wilkesboro, N. C., manufacturers of half-hose. A number of the mills' customers also use this system.

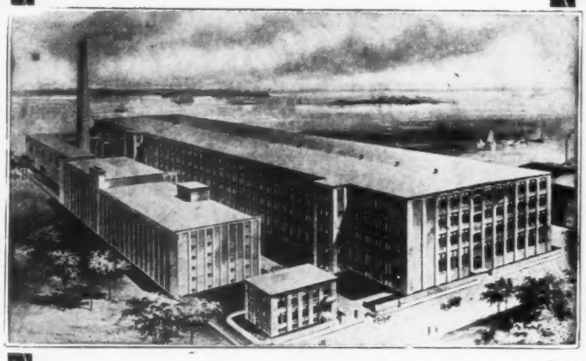
Waldensian Hosiery Mills, Valdese, N. C., have moved their knitting machinery from the old mill building near Valdese to the new Pauline Hosiery Mill, and will operate the equipment in its new location.

Granite Novelty Co., Lenoir, N. C., which recently erected a manufacturing building, have begun the operation of manufacturing men's half-hose, to be sold in the gray. They will continue also the manufacture of handkerchiefs.

Rock Hill Hosiery Mills, Rock Hill, S. C., are moving the dyeing and finishing equipment from their plant at Charlotte, to Rock Hill.

Contract for the $35,000 addition to the Acme Hosiery Mills, Asheboro, N. C., has been let to the Goode Construction Co., of Charlotte.

Quissett Mill
New Bedford, Mass.



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Carded and Combed Cotton Yarns in all numbers and Descriptions.

Ply Yarns our Specialty.

Egyptians, Sea Island, Peelers, Sakelarides, Pimas and Peruvians.

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Sycamore, Ala. — Sylacauga, Ala.

OFFER THE ADVANTAGES OF LARGE FACILITIES — QUICK SERVICE

THEY CAN READILY SUPPLY ANY TWIST, PLY, OR PUT-UP IN CARDED OR DOUBLE CARDED YARNS FOR KNITTING, WEAVING OR INSULATING IN ALL NUMBERS FROM 3's TO 40's.

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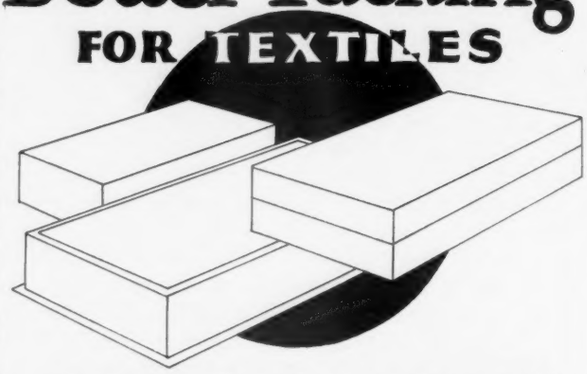
PHILADELPHIA READING

Better Packing FOR TEXTILES



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SILK HOSIERY FINISHES

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BROSCO SCROOP OIL

Can be used alone or in conjunction with one another to produce any desired feel and finish.
Does not shrink or tighten up the fabrics.

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Amber & Westmoreland Streets
Philadelphia, Penna. Since 1907

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Fully 25% of All Cotton Textile Spindles in the U. S. are Operated by Clients using the Loper Cost System.

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INDUSTRIAL ENGINEERS
Specialists in Textile Costs Over 19 Years
FALL RIVER, MASS. GREENVILLE, S. C.

Production Methods, Tolerations, and Selling Methods for Half-Hose.

(Continued from page 101.)

ways and means do you go about eliminating this trouble at the machines? Do you enforce any penalties on the fixers for such irregularities?

Answer (4a). The percentage of short lengths and long lengths in finishing under the system as outlined here should be negligible, particularly in view of the grey sizing system described. After giving those responsible for sizing a fair showing, if requirements are not lived up to, the course of action is self-evident.

Question (5a). In running ingrain work, do you oil your machines as usual, or do you make any changes along these lines? What trouble have you found in cleaning and washing out ingrain work in dye machines? Does the oil come out readily, or do you have to use some special preparation or solution in the way of soaps or cleaners to clean the hose thoroughly?

Answer (5a). In running ingrain work it is necessary to take the same care with the work that is necessary in running work for bleaching. Instead of the regular oiling method it is best to use an atomizer stainless oil method and spray the needles and sinkers. Ingrain work should be run out of yarns that do not require after-treatment oil removal methods. In running ingrain work special care must be taken throughout all processes to avoid soiling of the work and in case of soiled work which it is necessary to clean, special attention is required such as a regular dry cleaning method.

Question (6a). In case a change is anticipated toward manufacturing at a cheaper price, say $1.35 per dozen, what would be the necessary changes in the set-up of the machines to bring about lower manufacturing costs in rayon and acetate plaited numbers?

Answer (6a). If quality is to be maintained according to established workmanship the manufacturing cost will be the same for the better material cost, as for the lower material cost, and the resultant saving is only in the cost of materials used. In this respect by using single yarns in the heel and toe and lighter constructions in the leg and foot, based on lower cost of finer counts because of the greater yardage, construction cost may be reduced some. From this it is readily observed that material cost is the principal variable and unless the material cost and the labor cost plus a legitimate profit is not obtainable it is better to close down and not operate.

In taking the time to answer this long list of questions, the opinions herein contained have been expressed from long applied hard earned experience, and this reply is submitted in the hope that it will benefit the hosiery industry as a whole as well as the contributor. It will be appreciated if those receiving any benefit whatsoever from this discussion will so advise the Editor of COTTON, and if sufficiently encouraging, further contributions will follow from time to time.

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You get the length, lustre, *feel* that the goods should have.

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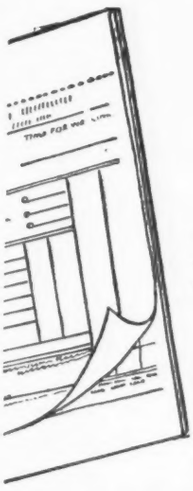

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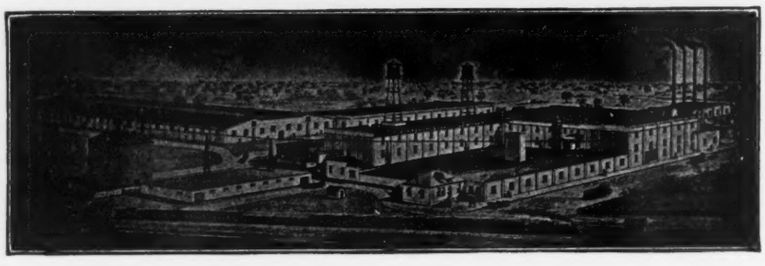

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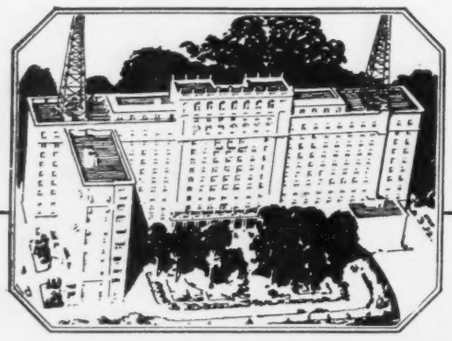

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One of our friends asked a traveling man from New York why he always stopped at the Atlanta Biltmore.

"Well," he replied, "it's the finest hotel in the entire South. The service is perfect. I enjoy the beautiful surroundings. It is one of the few large city hotels where traffic or other street clamor doesn't prevent sound sleep. But to me the *two best things* about the Biltmore are its friendly atmosphere and reasonable rates.

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One of the most serious obstacles to continuous production is loom stoppage due to warp breaks. In many mills 45 to 55% of all loom stops is due to this cause.

Recently a mill running fine broadcloths made a study of the causes of these warp breaks, and the resulting loom stops; recorded the facts and then did something about them.

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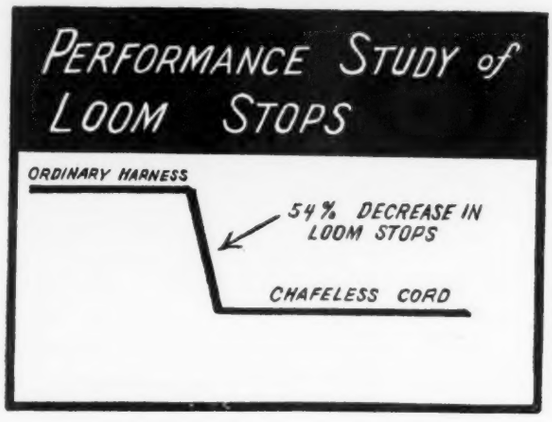
That knots, gouts, bunches and loose ends caused over half the loom stops—that certain *types* of harness caused more stops than others. The chart below shows the final result of two competing types.



Note the effect of Chafeless Cord—the flexible type of harness with the warp-saving finish over harness of the more rigid type—54% decrease in loom stops.

Chafeless Cord allowed small knots, slugs and bunches to go through. The more rigid harness broke the ends and stopped the loom.

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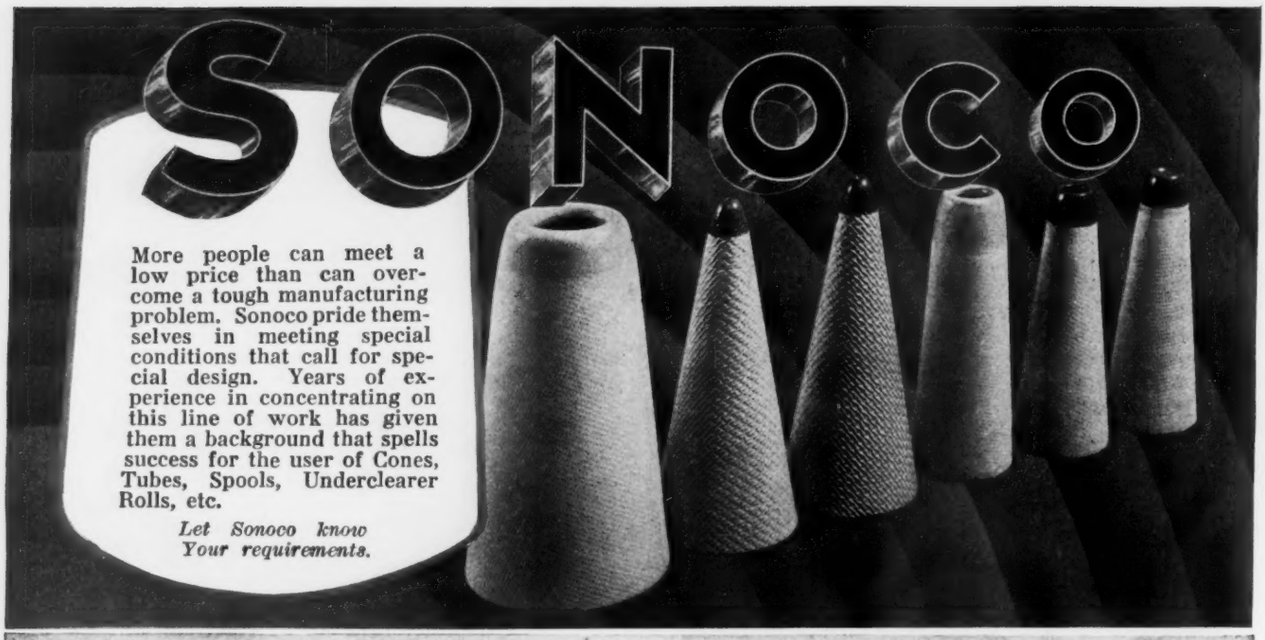

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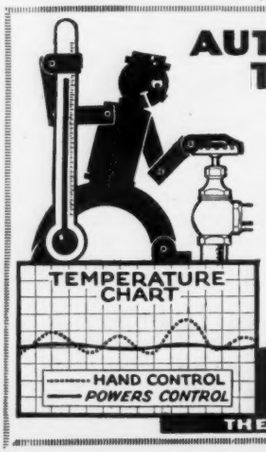

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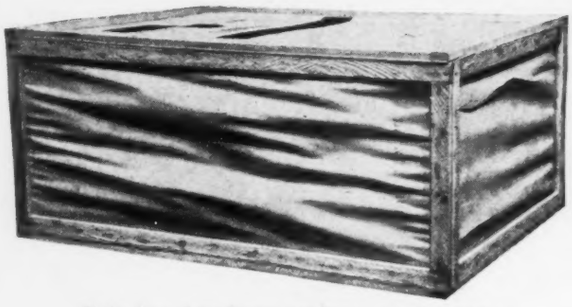

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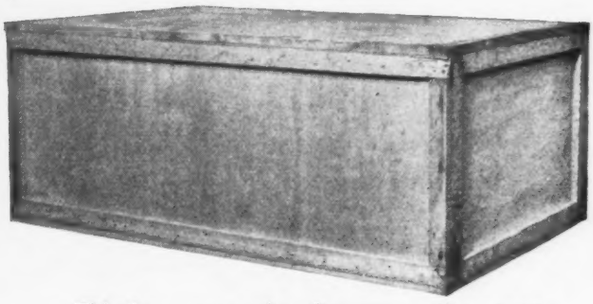

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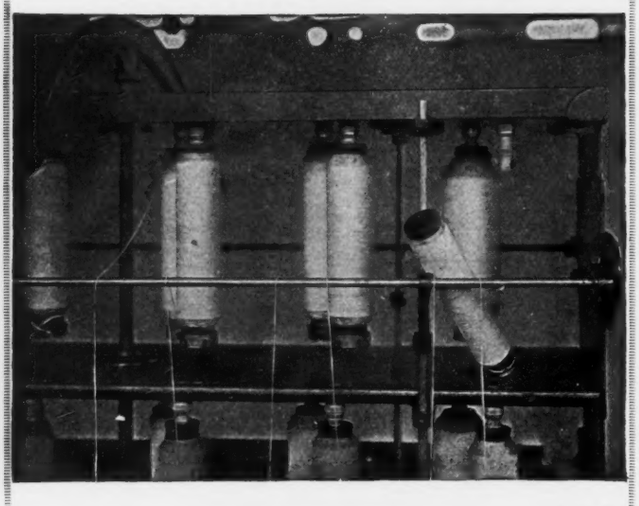

Eclipse Ball Bearing Bobbin Holder with Long Draft System

The Eclipse Ball Bearing Bobbin Holder used in connection with Long Draft system of Spinning has some very distinct and desirable advantages over wooden skewers.

Due to the Eclipse Ball Bearing Bobbin Holder's construction, the largest possible package of roving with a minimum of twist can be used without *stretching* the roving.

—WHY—

A package (large) of roving will be rotating on Ball Bearings, hence greatly reduced friction when being pulled from bobbin; also due to the construction of the Eclipse Ball Bearing Bobbin Holder, a package (large) of roving will automatically rotate without WABBLING—consequently, this means greatly reduced *stretching* of the roving.

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ECLIPSE TEXTILE DEVICES, INC.
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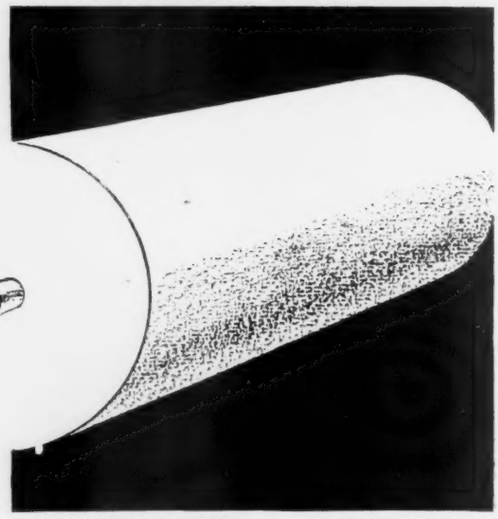
BOBBIN HOLDER

MACHINERY CLOTHING



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BALL BEARING THROUGHOUT WITH ZERK SYSTEM OF LUBRICATION

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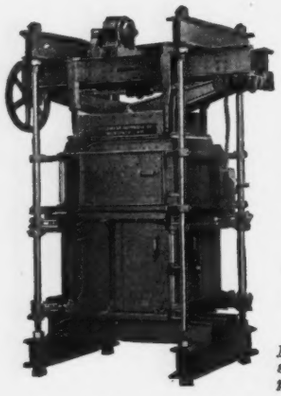

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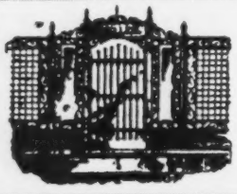

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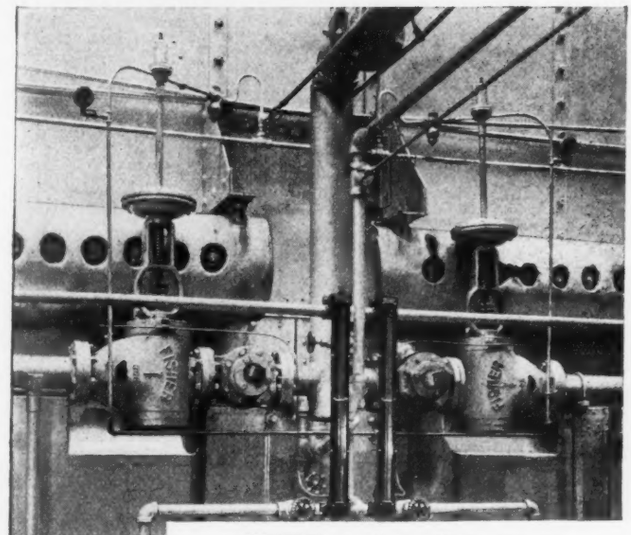

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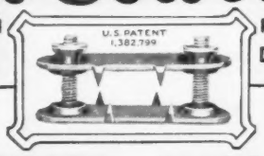

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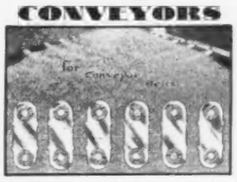

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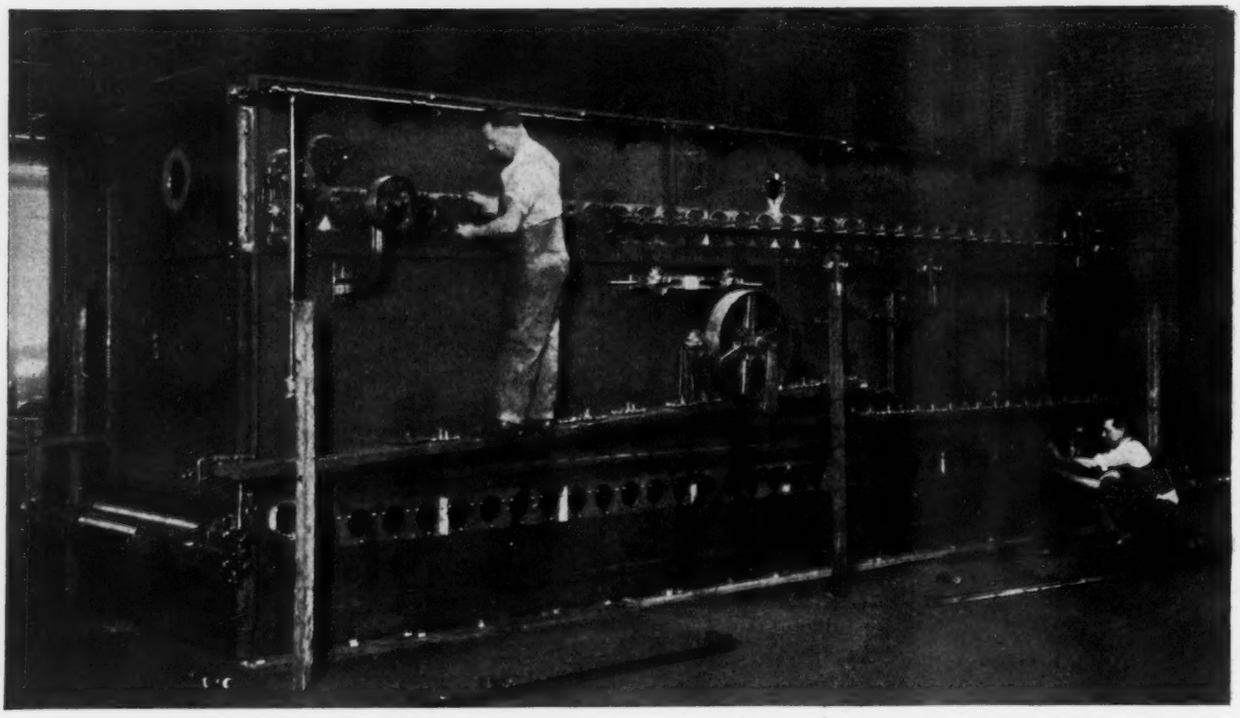

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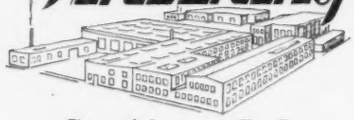

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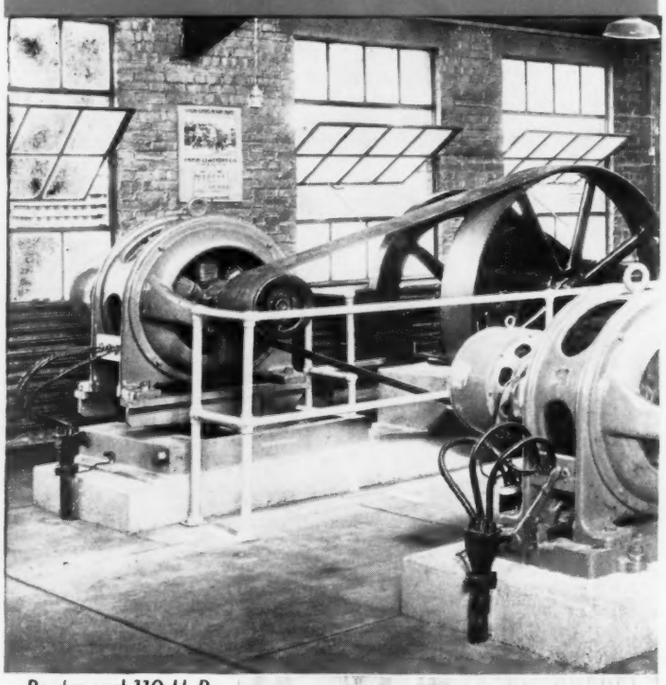

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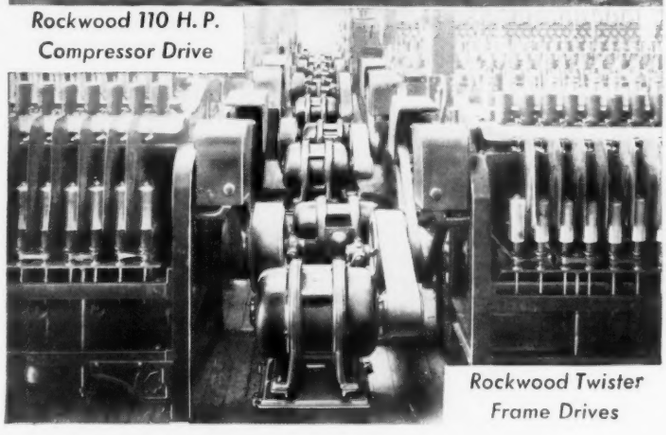

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